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COLOR MONITOR
SERVICE MANUAL

CHASSIS NO. : LP69G

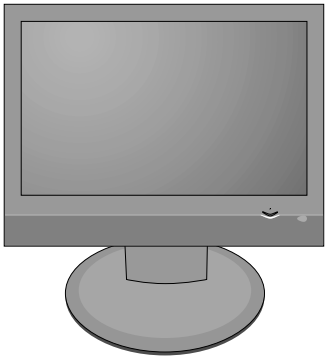
MODEL : FLATRON M208WA (M208WA-BZH.AVLP)**

***( ) **Same model for Service**

WEIXIUZHIJIA 维修之家

CAUTION

BEFORE SERVICING THE UNIT,
READ THE **SAFETY PRECAUTIONS** IN THIS MANUAL.



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PRECAUTION

WARNING FOR THE SAFETY-RELATED COMPONENT.

- There are some special components used in LCD monitor that are important for safety. ***These parts are marked ⚠on the schematic diagram and the replacement parts list.*** It is essential that these critical parts should be replaced with the manufacturer's specified parts to prevent electric shock, fire or other hazard.
- Do not modify original design without obtaining written permission from manufacturer or you will void the original parts and labor guarantee.

TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- The module not be exposed to the direct sunlight.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a softmaterial. (Cleaning with a dirty or rough cloth may damage the panel.)

⚠ CAUTION

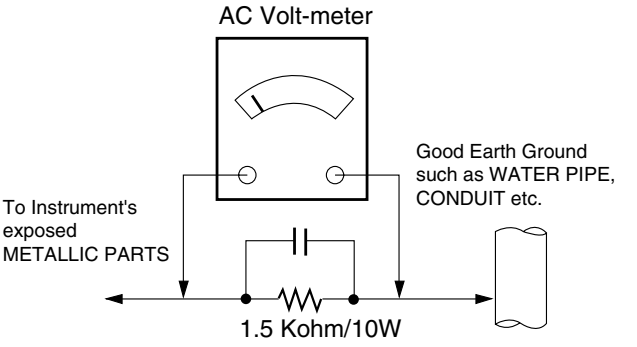
Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

⚠ WARNING

BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight (CCFL) or inverter circuit, must disconnect the AC adapter because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

Leakage Current Hot Check Circuit



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the ***SAFETY PRECAUTIONS*** on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
   CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
   d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.
   Do not test high voltage by "drawing an arc".
3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
4. Do not spray chemicals on or near this receiver or any of its assemblies.
5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
6. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
9. *Use with this receiver only the test fixtures specified in this service manual.*
   CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500°F to 600°F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature.
      (500°F to 600°F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
      CAUTION: Work quickly to avoid overheating the circuitboard printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500°F to 600°F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
      CAUTION: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife.
   Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.
   Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This specification is applied to 20" Wide Monitor TV used LP69G chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

(1) Power Voltage : Standard input voltage (100~240V@, 50/60Hz)
*Standard Voltage of each products is marked by models.
(2) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
(3) The receiver must be operated for about 20 minutes prior to the adjustment.

3. Test method

3.1 Performance : LGE test method followed
3.2 Demanded other specification
Safety : CE, IEC Specification
EMC : CE, IEC

4. General Specification(TV)

4-1. General Specification

4.1.1 TV

No	Item	Specification	Remark
1	Video input applicable system	PAL-D/K, B/G, I, SECAM L, NTSC, NTSC 4.43	
2	Receivable Broadcasting System	PAL/SECAM BG PAL/SECAM DK PAL I SECAM L/L'	(BZH/BTH) EU/Non-EU (PAL Market)
3	RF Input Channel	VHF : E2 ~ E12 UHF : E21 ~ E69 CATV : S1 ~ S20 HYPER : S21~ S41	PAL
		L/L' : B, C, D	FRANCE
4	Input Voltage	100-240V~, 50Hz/60Hz	
5	Market	EU	
6	Tuning System	FVS 100 program	PAL, 200 PR.(Option)
		FS	NTSC
7	Operating Environment	Temp : 10°C~ 35°C	
		Humidity : 20% ~ 80%	
8	Storage Environment	Temp : -10°C ~ 60°C non condensing	
		Humidity : 5%~90% non condensing	
9	Display	LCD Module	

4.1.2 RGB/DVI

No.	Item		Specification				Remark
1	Supported Sync. Type		Separate Sync., Digital				
2	Operating Frequency		Analog	Horizontal	28 ~ 83kHz		
				Vertical	56 ~ 75 Hz		
			Digital	Horizontal	28 ~ 83kHz		
				Vertical	56 ~ 75 Hz		
3	Resolution		Analog	Max.	1680 x 1050 @ 60Hz		
				Recommend	1680 x 1050 @ 60Hz		
			Digital	Max.	1680 x 1050 @ 60Hz		
				Recommend	1680 x 1050 @ 60Hz		
4	Input Voltage		Voltage :100 - 240 Vac, 50 or 60Hz				
5	Inrush Current		Cold Start : 50 A Hot : 120 A				
6	Operating Condition		Sync (H/V)	Video	LED	Wattage	
	Power S/W On	On mode	On/On	Active	Blue	60W	Max.
			On/On	Active	Blue	50W	Typ.
		Sleep mode	Off/On	Off	Amber	1W	
			On/Off				
	Power S/W Off	Off mode	-	Off	Off	1W	
7	MTBF		50,000 HRS with 90% Confidence level				Lamp Life : 50,000 Hours(min)
8	Using Altitude		5,000 m (for Reliability) 3,000m(for FOS)				
9	Operating Environment		Temp : 10°C ~ 35°C				
			Humidity : 20% ~ 80%				
10	Storage Environment		Temp : -10°C ~ 60°C non condensing				
			Humidity : 5% ~ 90% non condensing				

4-2. Module Specification(AUO M201EW02-V1, P/N:EAJ33945701_ZBD, EAJ33945701_Non-ZBD)

No.	Item	Min	Typ.	Max	Unit	Remark
1.	Type	TFT Color LCD Module				
2.	Active Display area	433.44 (H) x 270.9 (V)			mm	
3.	Outline dimension	459.4 (H) x 296.4 (V) x16.6 (D)			mm	Typ
4.	Pixel pitch	0.258mm (H) x 0.258mm (V) x RGB			mm	
5.	Color arrangement	RGB vertical stripe				
6.	Color Depth	16.7M color				
7.	Electrical Interface	LVDS				
8.	Surface Treatment	Hard coating(3H) & Anti-glare(Haze 25)				
9.	Operating Mode	Normally White				
10.	Back light Unit	4 CCFL (4 lamps)				
11.	R/T	R.T : 3.6ms + R.T : 1.4ms				Typ.

4-3. Optical characteristic specifications

4.3.1 Optical Characteristic

No.	Item	Specification					Remark
				Min	Typ	Max	
1	Viewing Angle <CR≥10>	R/L			80/80		
		U/D			80/80		
2	Luminance	Luminance (cd/m2)	RGB-PC	240	300		PSM:Dynamic, CSM: 6500K
			AV1/AV2/TV Component	190	230		PSM:Dynamic, CSM:Cool
		White Luminance Uniformity		75	80		
3	Contrast Ratio	CR	RGB-PC/ AV1/AV2/TV/ Component		1000		At DFC Mode Typ. 3000:1, Min. 2400:1
4	CIE Color Coordinates	WHITE	Wx	Typ. -0.03	0.313	Typ. +0.03	In RGB-PC input PSM : Dynamic CSM : 6500K White (100 IRE)
			Wy		0.329		
		RED	Rx		0.640		
			Ry		0.352		
		GREEN	Gx		0.288		
			Gy		0.628		
		BLUE	Bx		0.147		
			By		0.070		
		WHITE	Wx	Typ. -0.015	0.285	Typ. +0.015	In AV1/AV2/Component/TV input PSM : Dynamic CSM : Cool White (85 IRE)
			Wy		0.293		
		RED	Rx		0.640		
			Ry		0.334		
		GREEN	Gx		0.286		
			Gy		0.599		
		BLUE	Bx		0.154		
			By		0.077		

4-4. Model Specification

No	Item	Specification	Remark
1.	Market	EU	
2.	Broadcasting system	PAL BG/I/DK, SECAM-L/L', SECAM BG/DK	
3	RF Input Channel	VHF : E2 ~ E12 UHF : E21 ~ E69 CATV : S1 ~ S20 HYPER : S21~ S41	PAL
		L/L' : B, C, D	FRANCE
4.	SCART Input (1EA)	PAL, SECAM	
5.	CVBS Input (1EA)	PAL, SECAM, NTSC	4 System(Rear) :PAL50, SECAM, NTSC, PAL60
6.	S-Video Input (1EA)	PAL, SECAM, NTSC	4 System(Rear) : PAL50, SECAM, NTSC, PAL60
7.	Component Input (1EA)	Y/ Pb/Pr	480i/480P/576i/576P/720P/1080i
8.	RGB Input (1EA)	RGB-PC	Max 1680 * 1050@60Hz
		RGB-DTV	480p, 576p, 720p, 1080i
9.	DVI Input (1EA)	DVI-PC	Max 1680 * 1050@60Hz
		DVI-DTV	480p, 576p, 720p, 1080i
10.	Audio Input (3 EA)	CVBS, PC Audio, Component	L/R Input

5. Component Video Input (Y, PB, PR)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Proposed
1.	720*480	15.73	59.94	13.500	480i
2.	720*480	15.75	60.00	13.514	480i
3.	720*576	15.625	50.00	13.500	576i
4.	720*480	31.47	59.94	27.000	480P
5.	720*480	31.50	60.00	27.027	480P
6.	720*576	31.25	50.00	27.000	576P
7.	1280*720	44.96	59.94	74.176	720P
8.	1280*720	45.00	60.00	74.250	720P
9.	1280*720	37.50	50.00	74.25	720P
10.	1920*1080	33.72	59.94	74.176	1080i
11.	1920*1080	33.75	60.00	74.250	1080i
12.	1920*1080	28.125	50.00	74.250	1080i

6. RGB Input (PC)

No	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)
1	720*400	31.468	70.08	28.321
2	640*480	31.469	59.94	25.175
3	640*480	37.5	75	31.5
4	800*600	37.879	60.317	40.0
5	800*600	46.875	75.0	49.5
6	1024*768	48.363	60.0	65.0
7	1024*768	60.123	75.029	78.75
8	1152*864	67.500	75.000	108.0
9	1280*1024	63.981	60.02	108.0
10	1280*1024	79.976	75.035	135.0
11	1680*1050	64.674	59.883	119.0
12	1680*1050	65.290	59.954	146.25

7. RGB input (DTV)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Proposed
1.	720*480	31.47	59.94	27.000	480p
2.	720*480	31.50	60.00	27.027	480p
3.	720*576	31.25	50.00	27.000	576p
4.	1280*720	37.5	50.00	74.250	720p
5.	1280*720	44.96	59.94	74.176	720p
6.	1280*720	45.00	60.00	74.250	720p
7.	1920*1080	33.72	59.94	74.176	1080i
8	1920*1080	33.75	60.00	74.250	1080i
9	1920*1080	28.125	50.00	74.250	1080i

8. DVI input (PC)

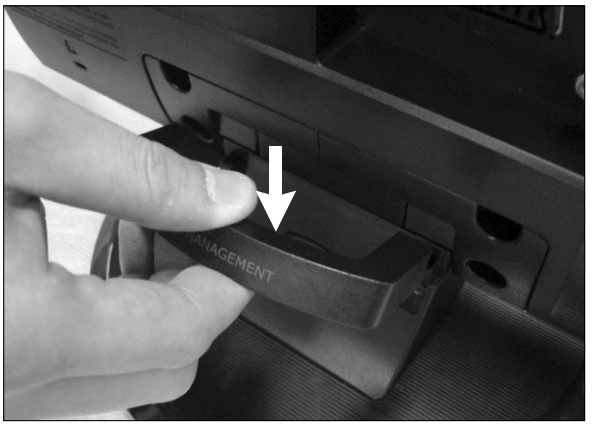
No	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)
1	720*400	31.468	70.08	28.321
2	640*480	31.469	59.94	25.175
3	640*480	37.5	75	31.5
4	800*600	37.879	60.317	40.0
5	800*600	46.875	75.0	49.5
6	1024*768	48.363	60.0	65.0
7	1024*768	60.123	75.029	78.75
8	1152*864	67.500	75.000	108.0
9	1280*1024	63.981	60.02	108.0
10	1280*1024	79.976	75.035	135.0
11	1680*1050	64.674	59.883	119.0
12	1680*1050	65.290	59.954	146.25

9. DVI input (DTV)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Proposed
1.	720*480	31.47	59.94	27.000	480p
2.	720*480	31.50	60.00	27.027	480p
3.	720*576	31.25	50.00	27.000	576p
4.	1280*720	37.5	50.00	74.250	720p
5.	1280*720	44.96	59.94	74.176	720p
6.	1280*720	45.00	60.00	74.250	720p
7.	1920*1080	33.72	59.94	74.176	1080i
8.	1920*1080	33.75	60.00	74.250	1080i
9.	1920*1080	28.125	50.00	74.250	1080i

DISASSEMBLY

 # 1



1. Push down slightly to disassembly it.
2. After push the cable management like above fig.(Downward), Disassembly the Cable management with pulling it upward.
3. Disassembly Cable Holder.

 # 2

Push the button.

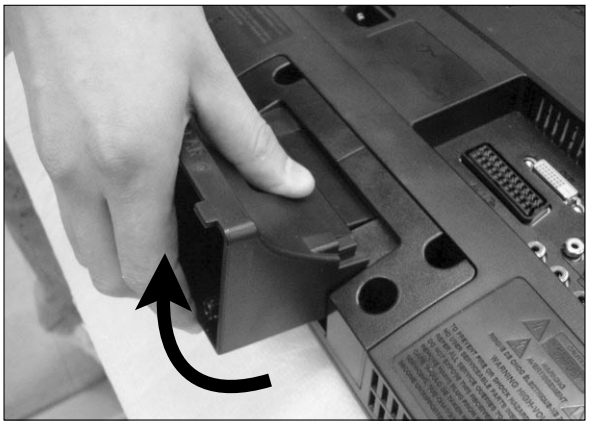
 # 3

Hold the stand base.

 # 4

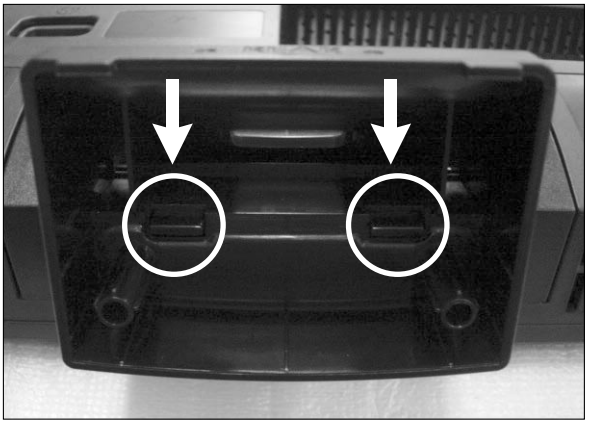
Disassembly stand base.

 # 5



Remove base body Like a picture.

 # 6

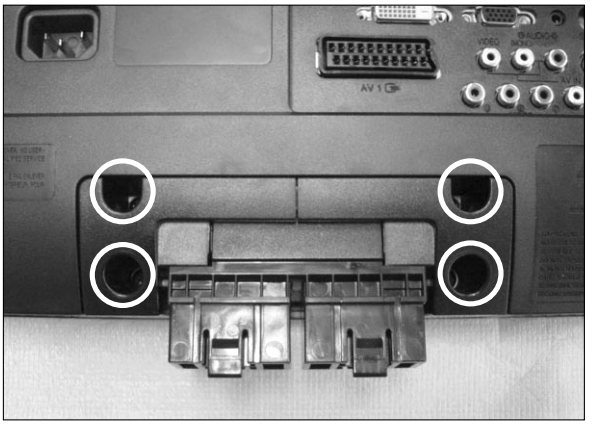


Push 2 letches Like a picture.

 # 7

Pull base body to separate from set during pressing 2 letches.

 # 8

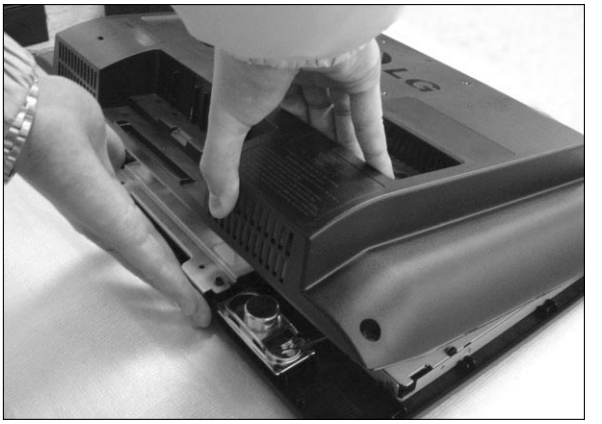


1. Remove the screws.
2. Disassembly Hinge Cover.

 # 9

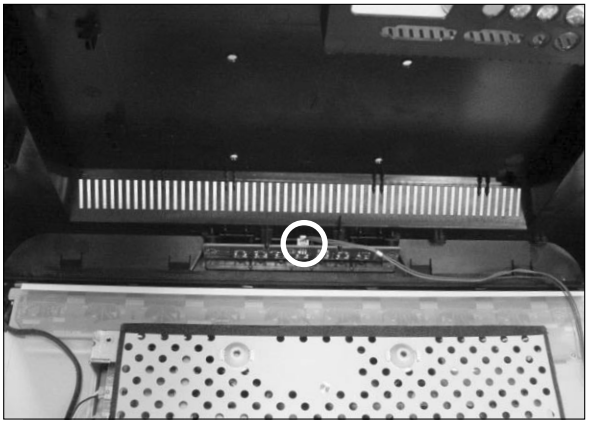
Remove the screws.

 # 10



Disassembly back cover.

 # 11



Pull the connector.

ADJUSTMENT INSTRUCTION

1. Application Range

This specification sheet is applied to 19"/ 20"/ 22" LCD Monitor TV which is manufactured in TV (or Monitor) Factory or is produced on the basis of this data.

2. Specification

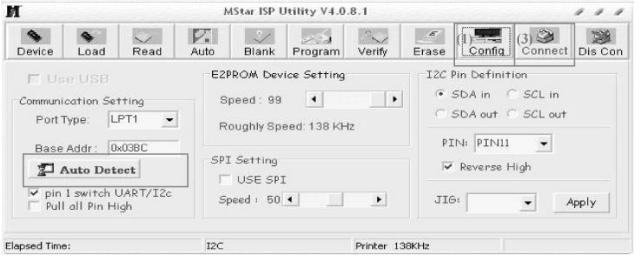
1) The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.
2) Power Adjustment : Free Voltage
3) Magnetic Field Condition : Nil.
4) Input signal Unit : Product Specification Standard
5) Reserve after operation : Above 30 Minutes
6) Adjustment equipments : Color Analyzer(CA-210 or CA-110), Pattern Generator (MSPG-925L or Equivalent), DDC Adjustment Jig equipment, SVC remote controller

3. Main PCB check process

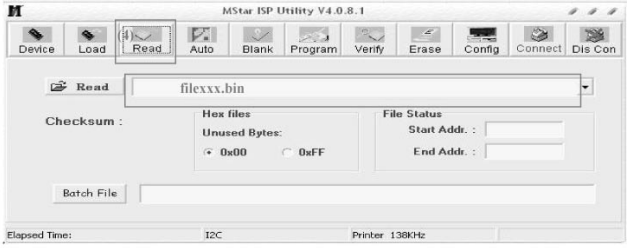
* APC - After Manual-Insult, executing APC

3.1. Download

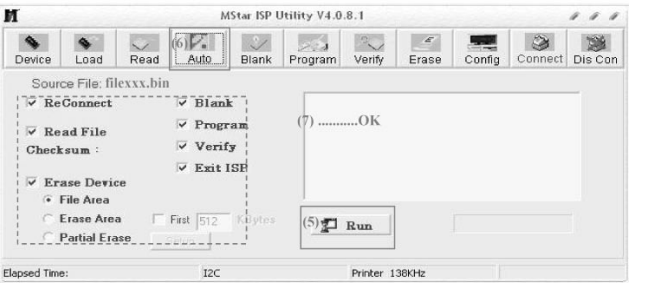
1) Execute ISP program “Mstar ISP Utility” and then click “Config” tab.
2) Set as below, and then click “Auto Detect” and check “OK” message.
   If display “Error”, Check connect computer, jig, and set.
3) Click “Connect” tab.
   If display “Can’t ”, Check connect computer, jig, and set.



4) Click “Read” tab, and then load download file(XXXX.bin) by clicking “Read”.



5) Click “Auto” tab and set as below
6) click “Run”.
7) After downloading, check “OK” message.

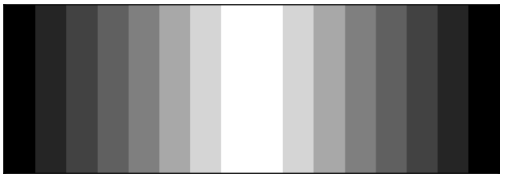


3.2. ADC Process

* If a scaler IC changed for PCB repairing, it is need to do ADC process at all times.

(1) PC input ADC

1) Auto RGB Gain/Offset Adjustment
   - Convert to PC in Input-source
   - Signal equipment displays
     Output Voltage : 700 mVp-p
     Impress Resolution XGA (1024 x 768 @ 60Hz)
     Model : 60 in Pattern Generator
     Pattern : 29 in Pattern Generator (MSPG-925 SERISE)
     [gray pattern that left & right is black and center is white signal (Refer below picture)].



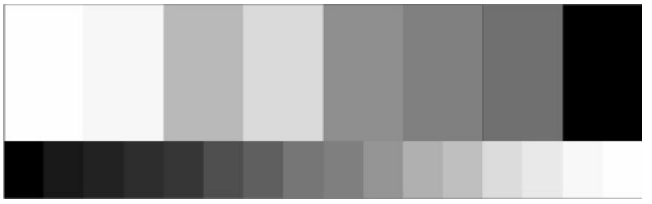
<Adjustment pattern (PC)>

   - Adjust by commanding AUTO_COLOR _ADJUST (0xF1) 0x00 0x02 instruction.
2) Confirmation
   - We confirm whether “0x8B,0x8C” address of EEPROM “0xB4” is “0xAA” or not.
   - If “0x8B,0x8C” address of EEPROM “0xB4” isn’t “0xAA”, we adjust once more.
   - We can confirm the ADC values from “0x00~0x05” addresses in a page “0xB4”

* Manual ADC process using Service Remocon. After enter Service Mode by pushing “INSTART” key, execute “Auto-RGB” by pushing “_” key at “Auto-RGB”.

(2) COMPONENT input ADC

1) Component Gain/Offset Adjustment
   - Convert to Component in Input-source
   - Signal equipment displays
     Impress Resolution 480P
     MODEL : 212 in Pattern Generator
     (480p Mode, Y : 100%, Pb/Pr : 75%)
     PATTERN : 08 in Pattern Generator
     (MSPG-925 SERISE)



<Adjustment pattern (COMPONENT)>

- Adjust by commanding AUTO_COLOR_ADJUST (0xF1) 0x00 0x02 instruction.

2) Confirmation
- We confirm whether "0x8D,0x8E" address of EEPROM "0xB4" is "0xAA" or not.
- If "0x8D,0x8E" address of EEPROM "0xB4" isn't "0xAA", we adjust once more.
- We can confirm the ADC values from "0x00~0x05" addresses in a page "0xB4".

3.3. Function Check

(1) Check display and sound

- Check Input and Signal items. (cf. work instructions)
1) TV
2) AV1 (SCART)
3) AV2 (CVBS/ S-Video)
4) COMPONENT (480P)
5) RGB (PC : 1024 x 768 @ 60hz)
6) DVI
7) PC Audio In and H/P Out

* Display and Sound check is executed by Remote controller.

4. Total Assembly line process

4.1. Adjustment Preparation

(1) Above 30 minutes H/run in RF no signal
(2) 15 Pin D-Sub Jack is connected to the signal of Pattern Generator.

4.2. Confirm color coordinate of RGB

* Check White Balance
- Set Input to RGB.
- Input signal : (1024 x 768 @ 60Hz), Full white 255/255 gray level (100 IRE, Model : 60, Pattern : 4 at MSPG925L)
- Set CSM : 6500k
- Confirm whether x = 0.313±0.03, y = 0.329±0.03 or not.
- Confirm whether luminance over 200cd/m^2
- Set CSM : 9300k
- Confirm whether x = 0.283±0.03, y = 0.298±0.03 or not.

* Check sRGB
- Set Input to RGB.
- Input signal : (1024 x 768 @ 60Hz)
  Full white 255/255 gray level (100 IRE, Model : 60, Pattern : 4 at MSPG925L)
- Set CSM : sRGB
- Confirm whether x = 0.313±0.03, y = 0.329±0.03 or not.
- Confirm whether luminance = 180±50 cd/m^2

4.3. Confirm color coordinate of AV2

(1) Set Input to AV2
(2) Input signal : CVBS, PAL @ 50Hz
Full white 216/255 gray level (85 IRE, Model : 202, Pattern : 78 at MSPG925L)
(3) Set PSM : Dynamic / CSM : Cool
(4) Confirm whether x = 0.285±0.03, y = 0.293±0.03 or not.

4.4. Confirm color coordinate of component

(1) Set Input to COMPONENT.
(2) Input signal : 480P
Full white 216/255 gray level (85 IRE Model : 212, Pattern : 78 at MSPG925L)
(3) Set PSM : Dynamic / CSM : Cool
(4) Confirm whether x = 0.285±0.03, y = 0.293±0.03 or not.

4.5. Confirm Auto adjustment operation.

(1) Input 1 Dot on/off & Rectangle Pattern at Model 60 (1024 x 768@60Hz).
(2) Confirm adjustment operation by changing Clock, Phase, H/V Position.
(3) Check Clock, Phase by pressing AUTO Key after varying the Clock & the Phase

4.6. Other quality

- Confirm that each items satisfy under standard condition that was written product spec.

(1) AV

1) Select input AV1 and whether picture is displayed or not. - SCART output displayed or not.
2) Select input AV2 (S-video) and whether picture is displayed or not
3) Select input AV2 (CVBS) and whether picture is displayed or not.

(2) TV

- Select input TV and check below item
* In Gumi Factory
C05 (E05) – TELETEXT Function Check
; (Applicable to the model that has Teletext code set-up item in Product spec)
C07 (E07) – Nicam DUAL Check.
C52 (E52) – Nicam Stereo Check.
Refer to "7.Preset CH information".

(3) RGB

***M198WA**
- Select input RGB model 112(1440*900@60hz), 64 Gray Scale pattern and whether picture is displayed or not

***M208WA** / **M228WA**
- Select input RGB model 122(1680*1050@60hz), 64Gray Scale pattern and whether picture is display or not

(4) COMPONENT

- Select input COMPONENT and whether picture is displayed or not.

(5) DVI

*M198WA

- Select input DVI model 112(1440*900@60hz), 64 Gray Scale pattern and whether picture is displayed or not

*M208WA / M228WA

- Select input DVI model 122(1680*1050@60hz), 64Gray pattern and whether picture is displayed or not.

4.7. DPM operation confirmation

- Check if Power LED Color and Power Consumption operate as standard.
  (1) Set Input to RGB and connect D-sub cable to set.
  (2) Measurement Condition : 230V@ 50Hz (Analog)
  (3) Confirm DPM operation at the state of screen without Signal

4.8 DDC EDID Write

1) Connect D-sub Signal Cable to D-Sub Jack.
2) Connect HDMI Signal Cable to HDMI Jack.
3) Write EDID DATA to EEPROM(24C02) by using DDC2B protocol.
4) Check whether written EDID data is correct or not. (refer to Product spec).

(1) M198WA EDID DATA

1) ANALOG DATA 128Byte

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	35	4B	01	01	01	01
0x01	01	10	01	03	0C	29	1A	78	EA	9B	B6	A4	53	4B	9D	24
0x02	14	4F	54	A7	6F	80	95	0F	81	80	81	40	71	4F	01	01
0x03	01	01	01	01	01	01	9A	29	A0	D0	51	84	22	30	50	98
0x04	36	00	98	FF	10	00	00	1C	00	00	00	FD	00	38	4B	1C
0x05	53	0E	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4D
0x06	31	39	38	57	41	0A	20	20	20	20	20	20	00	00	00	FC
0x07	00	8A	20	20	20	20	20	20	20	20	20	20	20	20	00	8D

2) DIGITAL DATA 256Byte

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	36	4B	01	01	01	01
0x01	01	10	01	03	80	29	1A	78	EA	9B	B6	A4	53	4B	9D	24
0x02	14	4F	54	A7	6F	80	95	00	81	80	81	40	71	4F	01	01
0x03	01	01	01	01	01	01	9A	29	A0	D0	51	84	22	30	50	98
0x04	36	00	98	FF	10	00	00	1C	00	00	00	FD	00	38	4B	1C
0x05	53	0E	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4D
0x06	31	39	38	57	41	0A	20	20	20	20	20	20	00	00	00	FC
0x07	00	0A	20	20	20	20	20	20	20	20	20	20	20	20	00	27

(2) M208WA EDID DATA

1) ANALOG DATA 128Byte

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	61	4E	01	01	01	01
0x01	01	10	01	03	0C	2B	1B	78	EA	CF	C5	A3	5A	49	A0	25
0x02	12	50	54	A7	6B	80	95	0F	95	00	81	80	81	40	71	4F
0x03	01	01	01	01	01	01	7C	2E	90	A0	60	1A	1E	40	30	20
0x04	36	00	B2	0E	11	00	00	1A	21	39	90	30	62	1A	27	40
0x05	68	B0	36	00	B2	0E	11	00	00	1C	00	00	00	FD	00	38
0x06	4B	1C	53	0F	00	0A	20	20	20	20	20	20	00	00	00	FC
0x07	00	4D	32	30	38	57	41	0A	20	20	20	20	20	20	00	AE

2) DIGITAL DATA 256Byte

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	62	4E	01	01	01	01
0x01	01	10	01	03	80	2B	1B	78	EA	CF	C5	A4	5A	49	A0	25
0x02	12	50	54	A7	6B	80	81	80	81	40	71	4F	01	01	01	01
0x03	01	01	01	01	01	01	7C	2E	90	A0	60	1A	1E	40	30	20
0x04	36	00	B2	0E	11	00	00	1A	21	39	90	30	62	1A	27	40
0x05	68	B0	36	00	B2	0E	11	00	00	1C	00	00	00	FD	00	38
0x06	4B	1C	53	0F	00	0A	20	20	20	20	20	20	00	00	00	FC
0x07	00	4D	32	30	38	57	41	0A	20	20	20	20	20	20	00	AE

(3) M228WA EDID DATA

1) ANALOG DATA 128Byte

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	3C	56	01	01	01	01
0x01	01	10	01	03	0C	2F	1E	78	EA	D4	25	A4	55	49	9B	27
0x02	13	50	54	A7	6B	80	95	0F	95	00	81	80	81	40	71	4F
0x03	01	01	01	01	01	01	7C	2E	90	A0	60	1A	1E	40	30	20
0x04	36	00	B2	0E	11	00	00	1A	21	39	90	30	62	1A	27	40
0x05	68	B0	36	00	B2	0E	11	00	00	1C	00	00	00	FD	00	38
0x06	4B	1C	53	0F	00	0A	20	20	20	20	20	20	00	00	00	FC
0x07	00	4D	32	32	38	57	41	0A	20	20	20	20	20	20	00	A4

2) DIGITAL DATA 256Byte

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	3D	56	01	01	01	01
0x01	01	10	01	03	80	2F	1E	78	EA	D4	25	A4	55	49	9B	27
0x02	13	50	54	A7	6B	80	81	80	81	40	71	4F	01	01	01	01
0x03	01	01	01	01	01	01	7C	2E	90	A0	60	1A	1E	40	30	20
0x04	36	00	B2	0E	11	00	00	1A	21	39	90	30	62	1A	27	40
0x05	68	B0	36	00	B2	0E	11	00	00	1C	00	00	00	FD	00	38
0x06	4B	1C	53	0F	00	0A	20	20	20	20	20	20	00	00	00	FC
0x07	00	4D	32	32	38	57	41	0A	20	20	20	20	20	20	00	64

4.9. HDCP SETTING

(High-Bandwidth Digital Contents Protection)

1) Connect D-sub Signal Cable to D-Sub Jack.
2) Input HDCP key with HDCP-key- in-program.
3) HDCP Key value is stored on EEPROM(AT24C64) which is E00~F20 addresses of 0xBC~0xBE page.

ADH	ADL	LEN
BC	00	128
BC	80	128
BE	00	33

4) AC off/ on and on HDCP button of MSPG925 and confirm whether picture is displayed or not of using MSPG925.
5) HDCP Key value is different among the sets.

4.10. Outgoing condition Configuration

1) After all function test., press IN-STOP Key by SVC Remote controller. And Make Ship Condition.
2) When pressing IN-STOP key by SVC remocon, Green and red LED are blinked alternatively. And then Automatically turn off. (Must not AC power OFF during blinking)

4.11. Internal pressure

- Confirm whether is nomal or not when between power board's ac block and GND is impacked on 1.5kV(dc) or 2.2kV(dc) for one second.

4.12 Option data setting (SVC OSD setting)

(1) PAL Model

***M198WA(Change by Suffix) Tool Option 8065**

	M198WA-BZH	REMARK
Resolution	1	WXGA+
Module	0	
TV	1	
SCART	1	
AV2	1	
COMPONENT	1	
PC-RGB	1	
DVI	1	
HDMI	0	

***M208WA/M228WA(Change by Suffix) Tool Option 8066**

	M208WA-BZH / M228WA-BZH	REMARK
Resolution	2	WSXGA
Module	0	
TV	1	
SCART	1	
AV2	1	
COMPONENT	1	
PC-RGB	1	
DVI	1	
HDMI	0	

***M198WA/M208WA/M228WA(Change by Suffix) Area Option 00**

No.	Item	Condition	Remark
		Option1(6)	
1	200PR	0	0 : 200 PR Off 1 : 200 PR On
2	ACMS	1	0 : ACMS Off 1 : ACMS On
3	Text	1	TOP FLOF
4	CH+AU	0	0 : Except below area 1 : China, Australia
5	BOOSTER	0	
		Option2(2)	
1	SYS	0	0 : BG/I/DK/L 1 : BG/I/DK/M
2	A2 ST	1	Acting FM-ST after checking Nicam
3	I II SAVE	0	0 : I II SAVE Off 1 : I II SAVE On
4	HDEV	0	0 : Except below area 1 : China
5	V-Curve	0	0 : Turbo Volume Off 1 : Turbo Volume On
6	MONO	0	
		Option3(2)	
1	KEY-TYPE	2	2 : 8Key
		Option 4(3)	
1	Default Lang (Language)	3	
2	Lang	0	Chesky,Dansk,Deutsch,English Español,Français,Italiano, Magyar,Nederlands,Norsk, Polski,Português, Русский Romaneste,Suomi,Svenska
3	T- Lang	0	AUSTRIA,BULGARIA, CROATIA,CZECH, DENMARK, ESTONIA,FINLAND,FRANCE, GERMANY,GREECE, HUNGARY,ITALY,LATVIA, NETHERLANDS,NORWAY, POLAND,PORTUGAL, RUMANIA,RUSSIA,SERBIA, SLOVAKIA,SLOVENIA,SPAIN, SWEDEN,SWITZERLAND, TURKEY,UK,ARAB,HEBREW, Others
		Option5(9)	
1	2HR-OFF	1	0 : 2 Hour off option -OFF 1 : 2 Hour off option -ON
2	TV-LINK-TUNER	0	
3	FACTORY-MODE	0	0 : EEPROM Write Protection On 1 : EEPROM Write Protection Off
4	CHANNEL-MUTE	1	
		Ram Delay	
1	Clock Phase	7	
2	DQS0 Phase	2	
3	DQS1 Phase	2	
4	DQS2 Phase	2	
5	DQS3 Phase	2	
		Power Off History	
1	Last Power	0	
2	Remocon	0	
3	Key	0	
4	Sleep Timer	0	
5	RS232	0	
6	Off Timer	0	
7	Auto Off	0	
8	2Hour Off	0	
9	Reset	0	
		ETC	
1	DFC Control	1	
2	Exit Key	0	
3	PWM DIM	255	
4	Dimming Ctl.	255	
5	DEBUG ON	0	
6	UART ON	3	
7	AGC AKEOVER	16	
8	AGC EData	0	
9	AGC BData	0	
10	VID Lev	96	

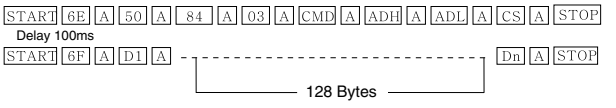
5. Adjustment Command

5.1. Adjustment Commands(LENGTH=84)

Adjustment Contents	CMD (hex)	ADR	VAL	Description
FACTORY ON	E0	00	00	Factory mode on
FACTORY OFF	E2	00	00	Factory mode off
EEPROM ALL INIT.	E4	00	00	EEPROM All clear
EEPROM Read	E7	00	00	EEPROM Read
EEPROM Write	E8	00	data	EEPROM Write by some values
COLOR SAVE (R/G/B cutoff, Drive, Contrast, Bright)	EB	00	00	Color Save
H POSITION	20	00	00 – 100	They have different range each mode, FOS Adjustment
V POSITION	30	00	00 – 100	
CLOCK	90	00	00 – 100	
PHASE	92	00	00 – 100	
R DRIVE	16	00	00 – FF	Drive adjustment
G DRIVE	18	00	00 – FF	
B DRIVE	1A	00	00 – FF	
R CUTOFF	80	00	00 – 7F	Offset adjustment
G CUTOFF	82	00	00 – 7F	
B CUTOFF	84	00	00 – 7F	
BRIGHT	10	00	00 – 3F	Bright adjustment
CONTRAST	12	00	00 - 64	Luminance adjustment
AUTO_COLOR_ ADJUST	F1	00	02	Auto COLOR Adjustment
CHANGE_COLOR _TEMP	F2	00	0,1,2,3	0: COOL 1: NORMAL 2: WARM 3: USER
FACTORY_DEFAULT	F3	00	00	Factory mode off & II_SW is “1” & Input change to “ TV”
AUTO_INPUT CHANGE	F4	00	0,1,2,4	0 : TV 1 : AV1 2 : AV2 3 : Component 4 : RGB 5 : DVI

5.2 EEPROM DATA READ

(1) Signal Table



(2) Command Set

Adjustment contents	CMD(hex)	ADH(hex)	ADL(hex)	Details
EEPROM READ	E7	A0	0	0-Page 0~7F Read
			80	0-Page 80~FF Read
		A2	0	1-Page 0~7F Read
			80	1-Page 80~FF Read
		A4	0	2-Page 0~7F Read
			80	2-Page 80~FF Read
		A6	0	3-Page 0~7F Read
			80	3-Page 80~FF Read

* Purpose : To read the appointment Address of E2PROM by 128(80h)-byte

5.3. E2PROM Data Write

(1) Signal Table

START 6E A 50 A 84+n A 03 A CMD A ADH A ADL A
Data_1 A ... Data_n A CS A STOP

LEN : 84h+Bytes
CMD : 8Eh
ADH : E2PROM Slave Address(A0,A2,A4,A6,A8), Not 00h(Reserved by BufferToEEPROM)
ADL : E2PROM Sub Address(00~FF)
Data : Write data

(2) Command Set

Adjustment contents	CMD(hex)	ADH(hex)	Details
EEPROM WRITE	E8	94	16-Byte Write
		84+n	n-byte Write

* Purpose
1) EDID write : 16-byte by 16-byte, 8 order (128-byte) write(TO “00 – 7F” of “EEPROM Page A4”).
2) FOS Default write : 16-mode data (HFh, HFl, VF, STD, HP, VP, Clk, ClkPh, PhFine) write.
3) Random Data write : write the appointment Address of E2PROM.

5.4. VRAM Read

1) Send CMD(70h) to read Video RAM value from MICOM And save its value to 128-Bytes Buffer(Common Buffer for the use of EDID)

START 6E A 50 A 84 A 03 A 70 A 00 A 00 A CS A STOP

2) Delay 500ms (Time to Wait and Read Video RAM from MICOM)

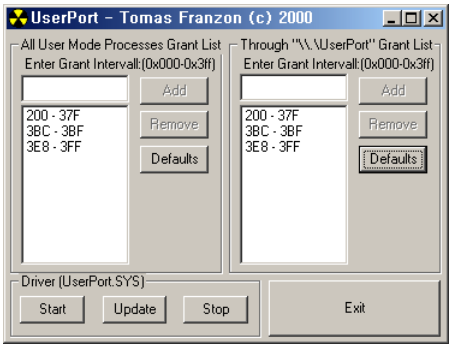
START 6F A Data1 ... Data28 A CS NA STOP

3) Be transmitted the contents of MICOM’s 128-bytes Buffer to PC. (128th Data is the CheckSum of 127-bytes data : That’s OK if the value of adding 128-bytes Data is Zero)

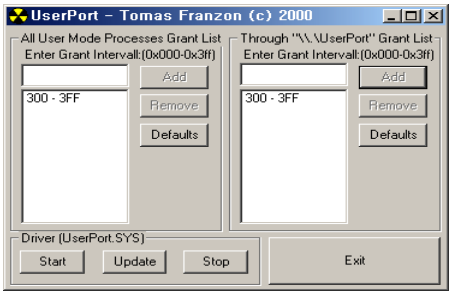
Windows EDID V1.0 User Manual

Operating System: MS Windows 98, 2000, XP
Port Setup: Windows 98 => Don't need setup
Windows 2000, XP => Need to Port Setup.
This program is available to LCD Monitor only.

1. Port Setup
   a) Copy "UserPort.sys" file to
   "c:\WINNT\system32\drivers" folder
   b) Run Userport.exe

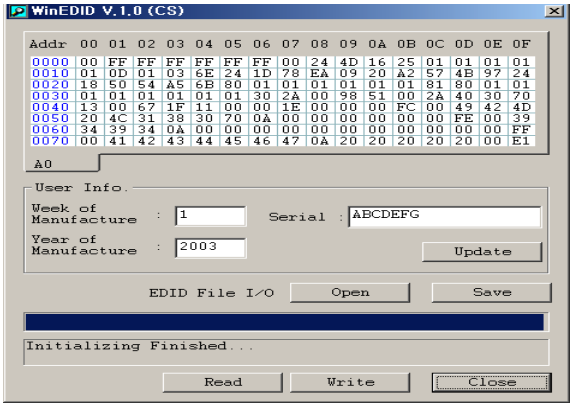


   c) Remove all default number
   d) Add 300-3FF

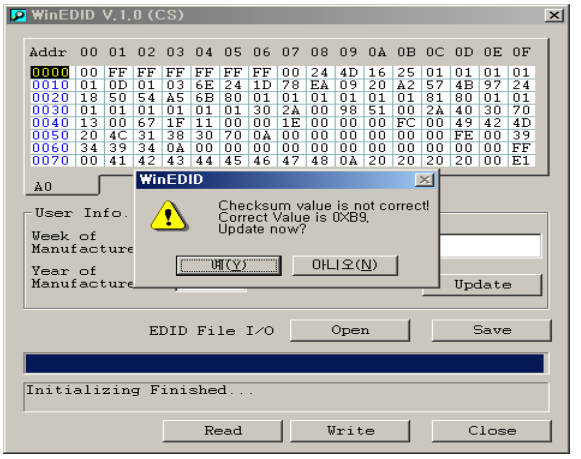


   e) Click Start button.
   f) Click Exit button.

2. EDID Read & Write
   1) Run WinEDID.exe



   2) Edit Week of Manufacture, Year of Manufacture, Serial Number
      a) Input User Info Data
      b) Click "Update" button
      c) Click " Write" button



SERVICE OSD

BLUEBIRD3 - LP69G	
Version 2.01 061227	
M208WA WSXGA AUO-20W	
UTT	0
Tool Option	8066
Area Option	00
OPTION 1	6
OPTION 2	2
OPTION 3	2
OPTION 4	3
OPTION 5	9
RAM Delay	
Power Off History	
ETC	

■ **Description of operation**

- Tool Option : Adjust Tool Option
- Area Option : Adjust Area Option
- Option 1 : Adjust Tuner Service Option
- Option 2 : Adjust Sound Service Option
- Option 3 : Adjust Local key
- Option 4 : Select default language
- Option 5 : Adjust ETC
- RAM Delay : Adjust RAM Delay
- Power Off History : Adjust Power Off History
- ETC

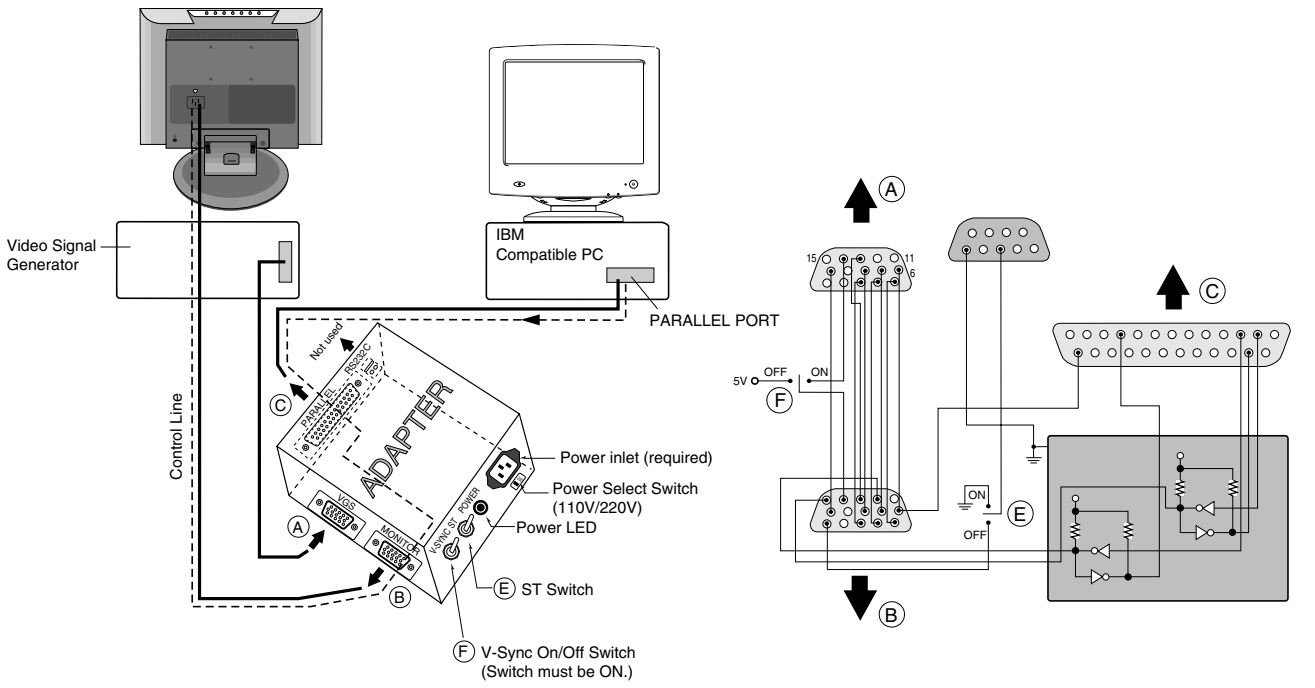
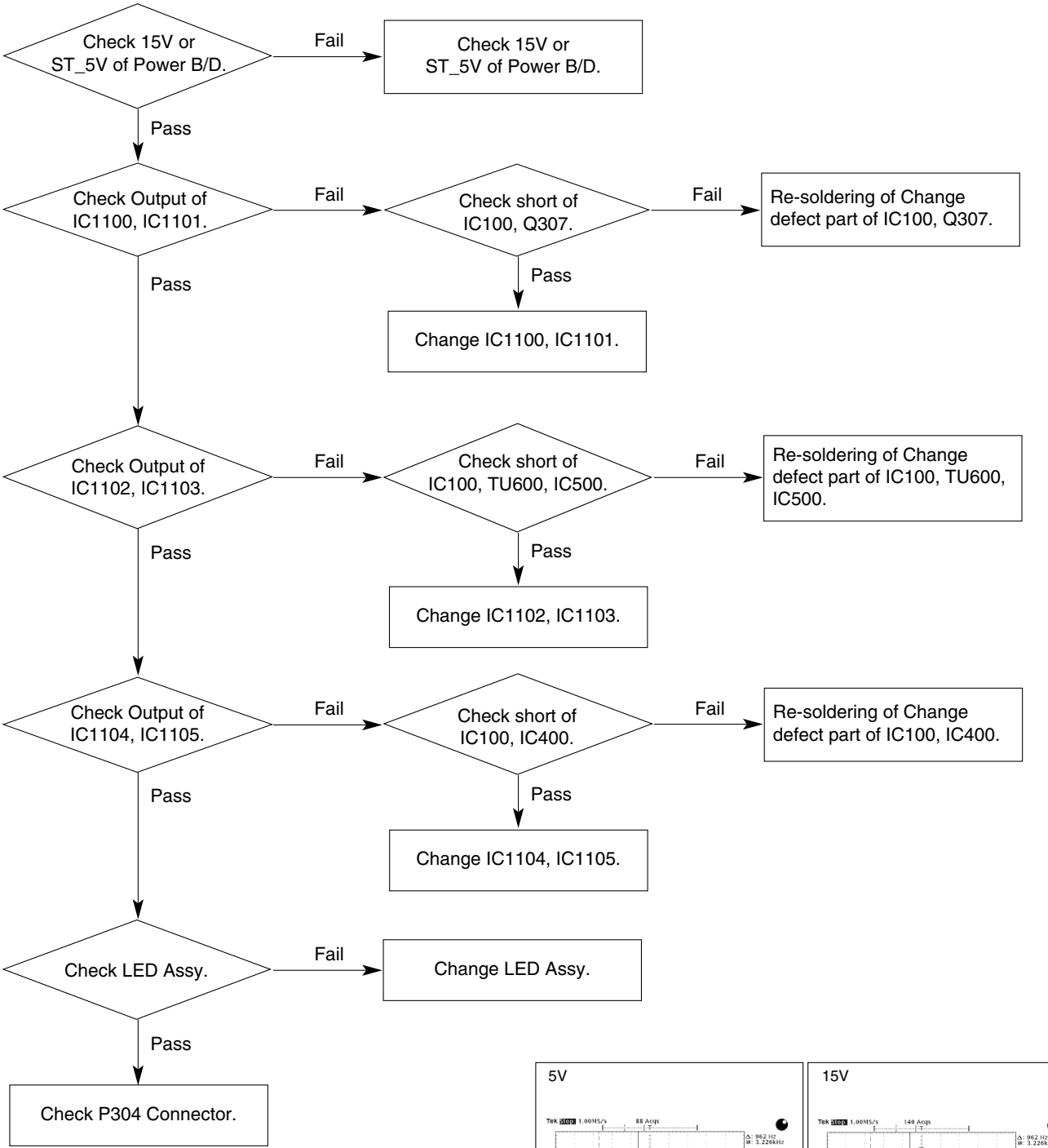


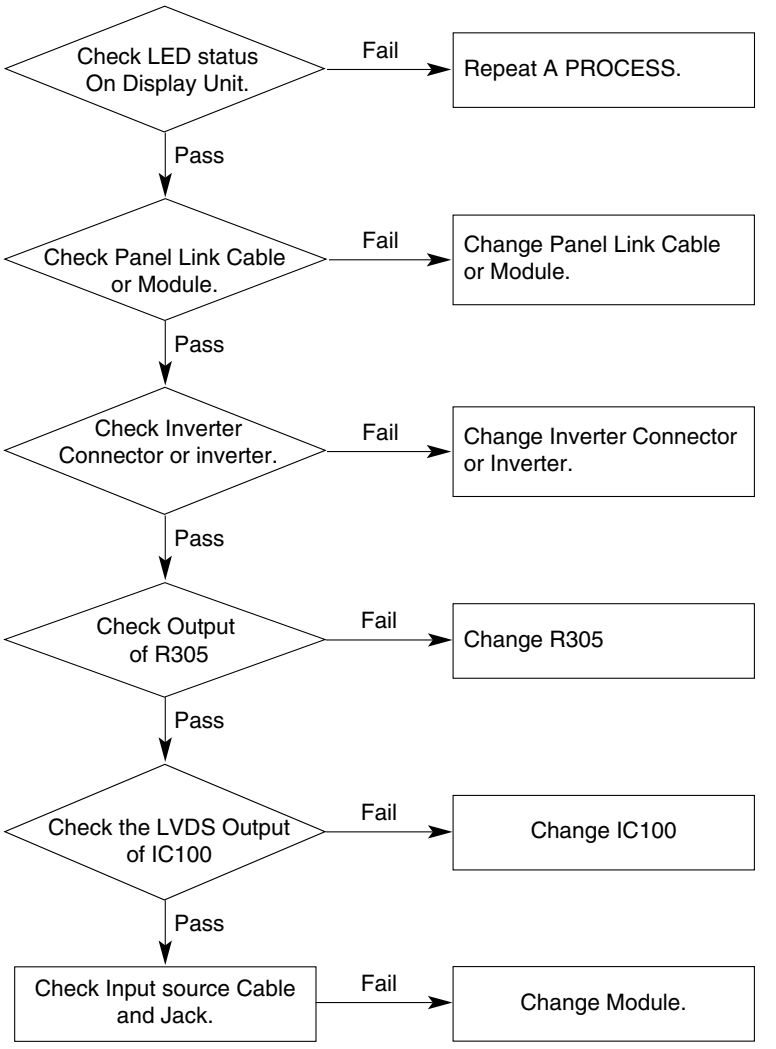
Figure 1. Cable Connection

TROUBLESHOOTING GUIDE

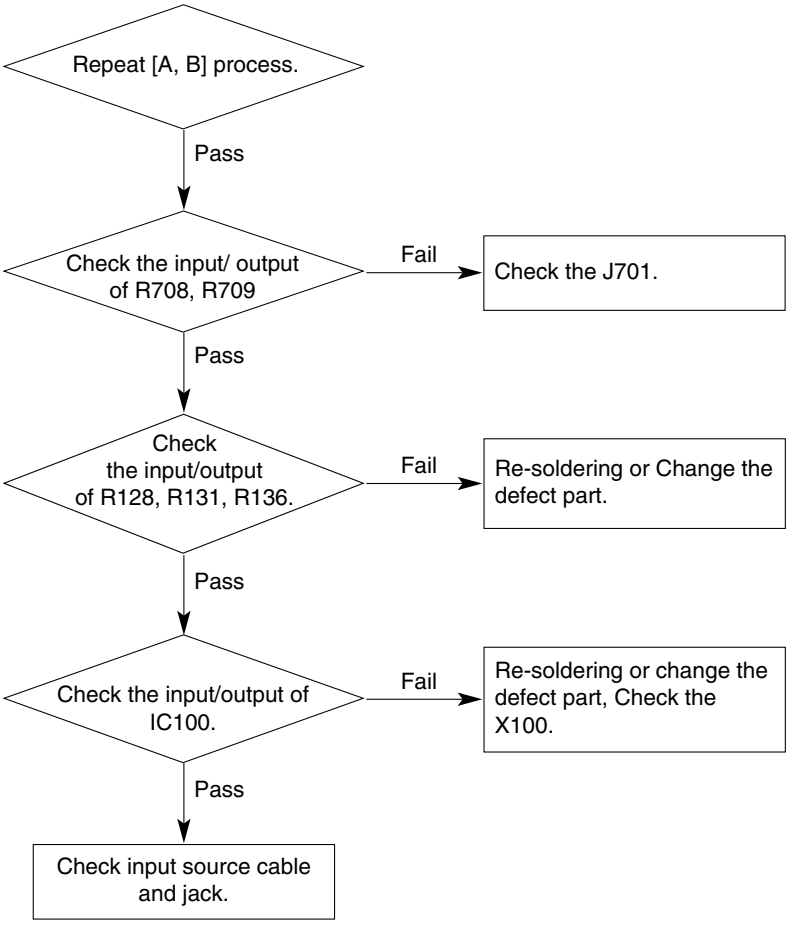
1. NO POWER (LED INDICATOR OFF) : [A] Process



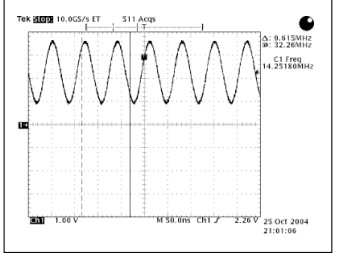
2. NO RASTER : [B] Process



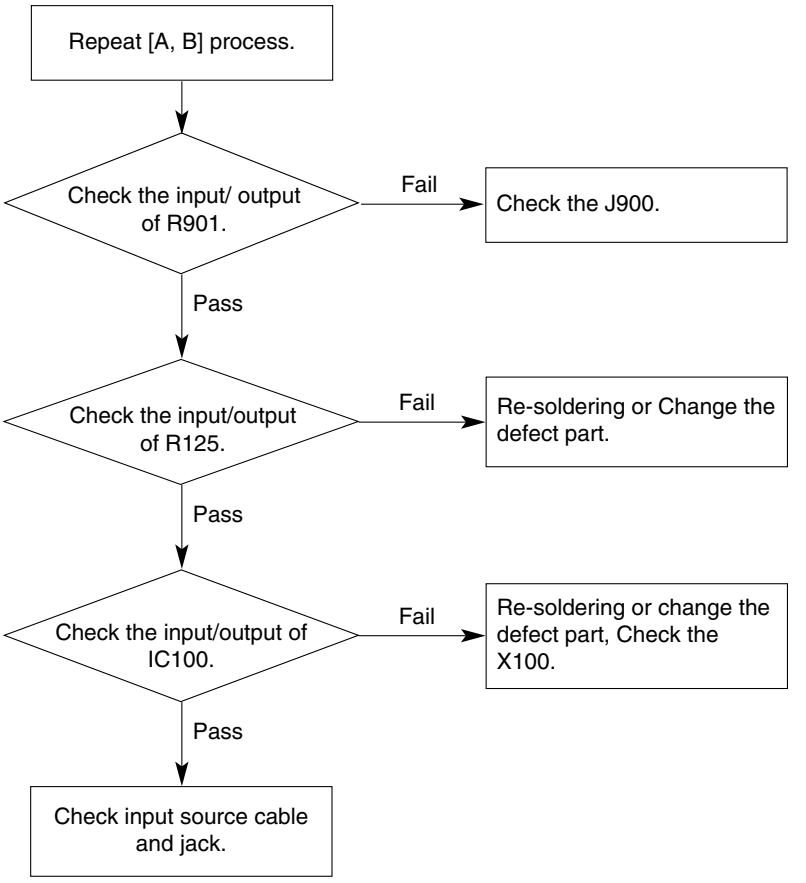
3. NO RASTER ON RGB SINGAL



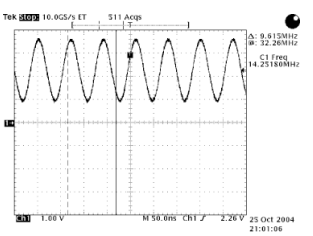
X100



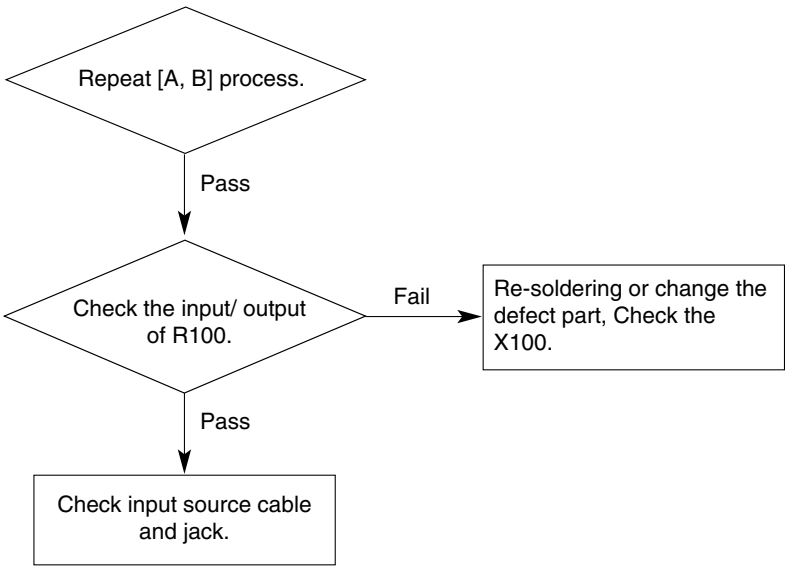
4. No Raster on Component Signal

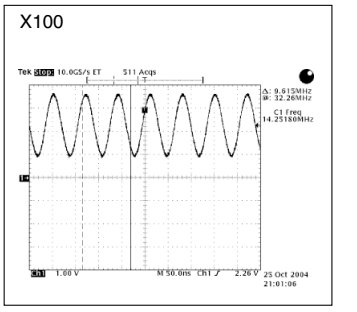


X100



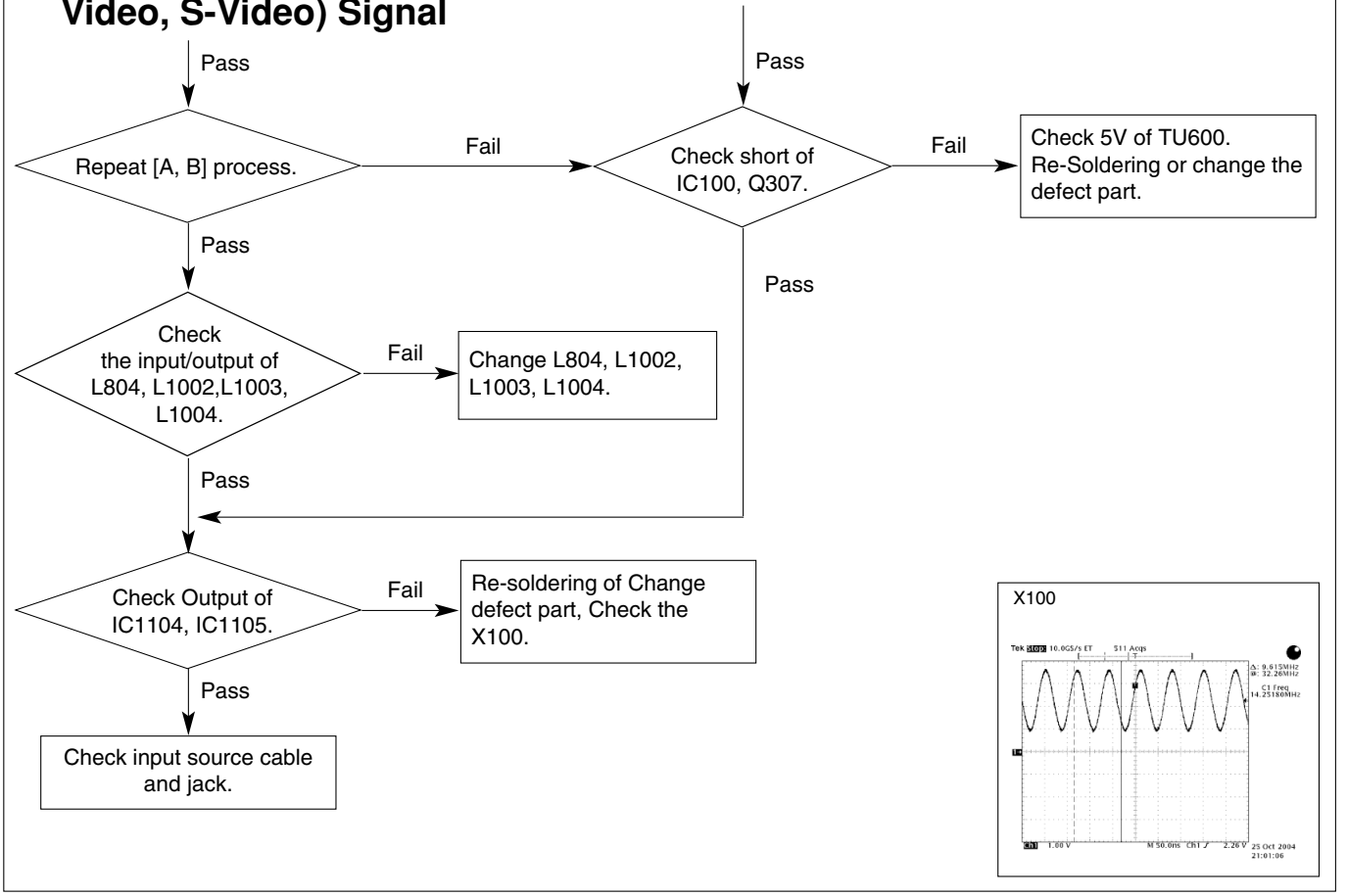
5. No Raster on DVI Signal


Repeat [A, B] process.
Pass
Check the input/ output of R100.
Fail
Re-soldering or change the defect part, Check the X100.
Pass
Check input source cable and jack.

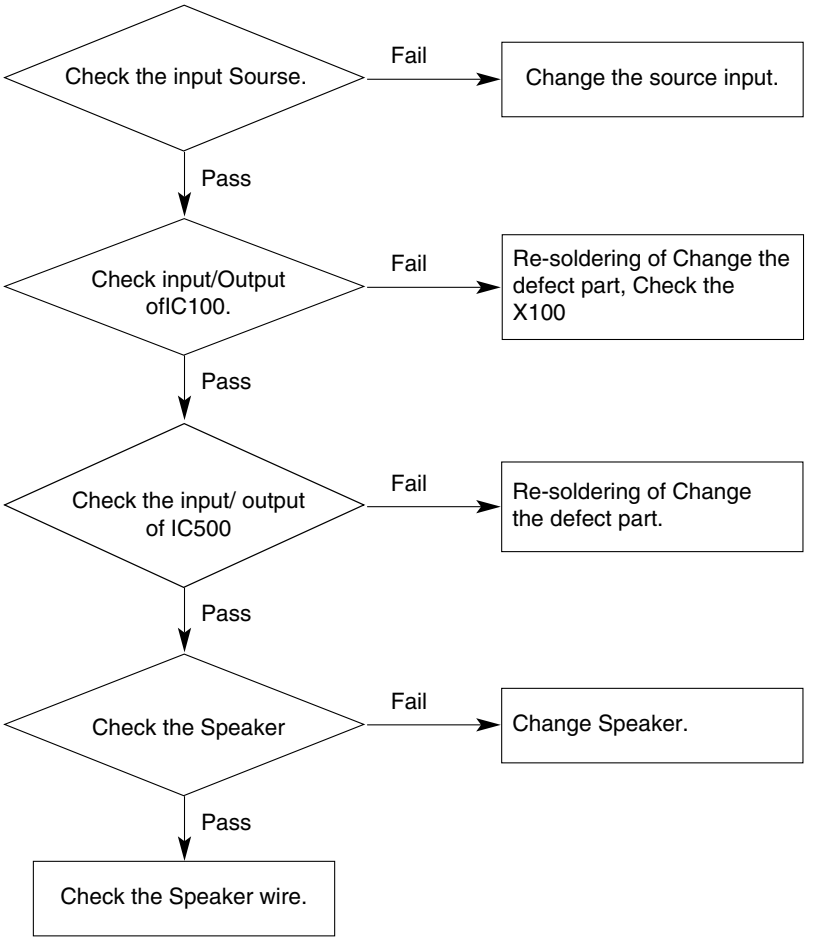


6. No Raster on AV(Scart in Video, S-Video) Signal

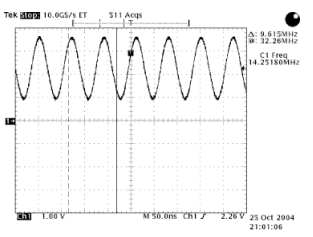
7. No Rasteron TV(RF) Signal



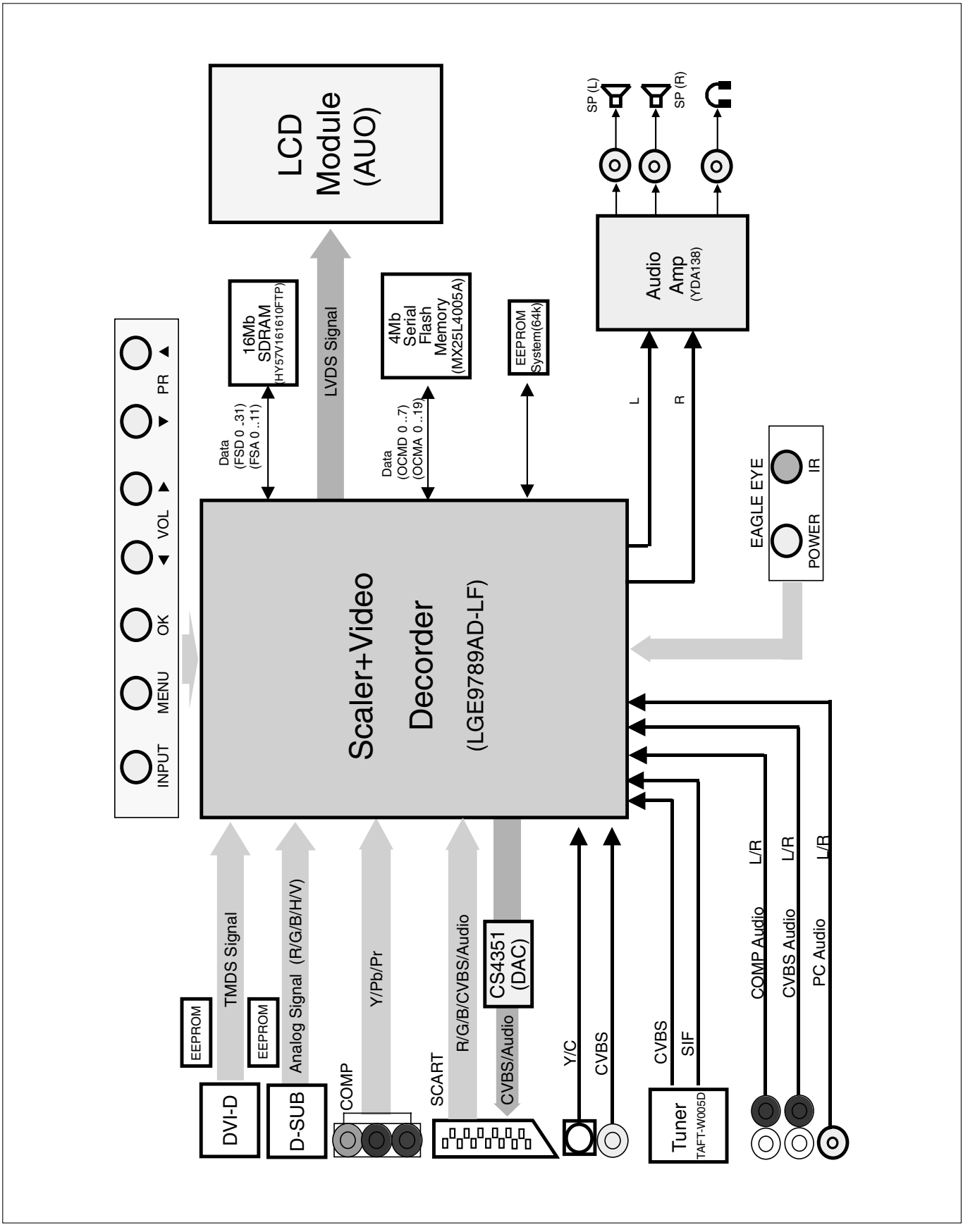
8. No sound



X100



BLOCK DIAGRAM



DESCRIPTION OF BLOCK DIAGRAM

1. Power Supply Block (LIPS)

This Block Generates DC Voltage (5V,15V) to Main Control system from AC Power (100-240 V, 50/60 Hz, 1.0A)

2. DC/DC Converter block

DC/DC Converter convert the input 5V,15V to proper 1.8V,2.5V,3.3V,5V,10.5V for Main control system.
For shooting heat trouble, we use the DC/DC converting IC

3. Scaler + Video/Audio decorder (Scaler IC, LGE9789AD-LF)

It is composed of LGE9789AD-LF.
It includes AD Converter, LVDS/TMDS Transmitter, Micom, and Audio processor.

1) Video Signal - CVBS/S-Video/Component/RGB/DVI(TMDS)
   This Block Selects input Video signals (like CVBS, Y/C, SCART RGB) and output RGB signal.
   On decoding, We can control signal like Contrast, Brightness, Sharpness, Color, tint signals including Adaptive Comb Filter.

2) Audio Signal
   This block analyzes audio input signal through A/V Jack and PC audio and Tuner IF.
   The analyzed signals transmitted to audio amplifier (YDA138)
   On decoding, We can control signal like Bass, treble.

4. Flash Memory(MX25L4005A)

This is composed of MX25L4005A.
This store the source data of micom.

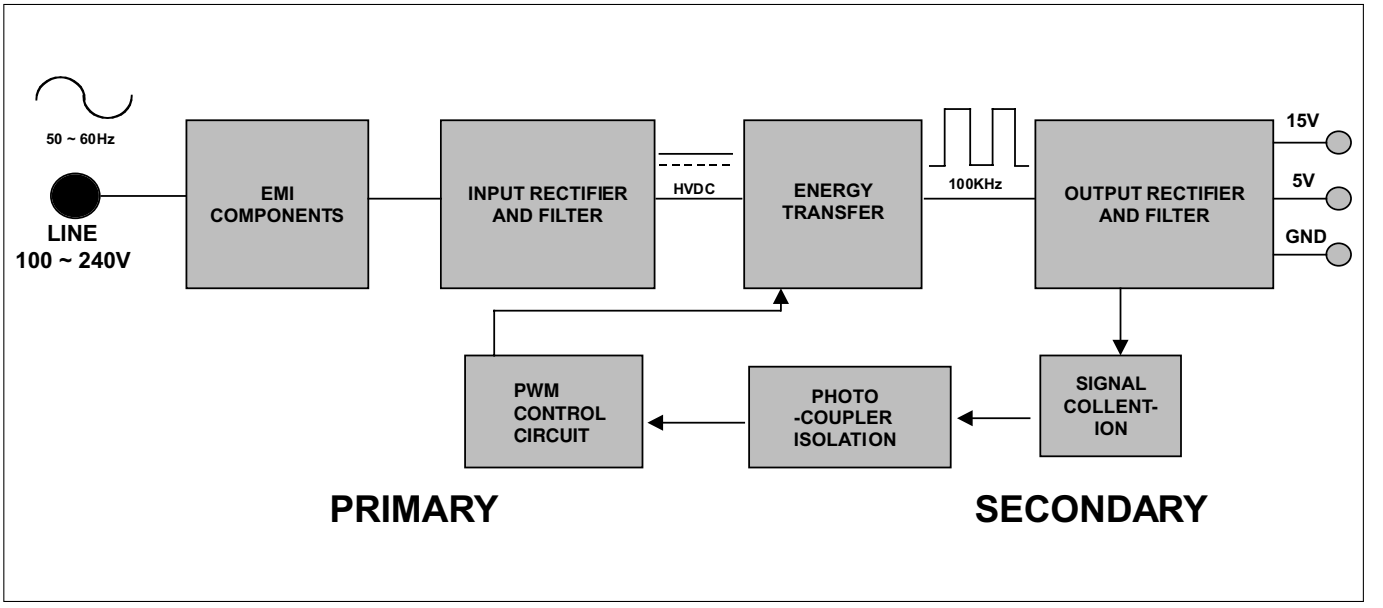
5. Tuner

Micom controls this IC through IIC line.
Tuner makes CVBS and transmits IF signal to LGE9789AD-LF.

6. Audio Amplifier (YDA138)

This block is composed of YDA138 and peripheral device.
The function of the audio amplifier is that to amplify audio L / R signal transmitted from audio decoder.
The audio signal is amplified according to pre-defined DC volume control curve.
Also, headphone amplifier is included at this IC.

LIPS Board Block Diagram



Operation description_LIPS

1. EMI components.
This part contains of EMI components to comply with global marketing EMI standards like FCC,VCCI CISPR, the circuit included a line-filter, across line capacitor and of course the primary protection fuse.

2. Input rectifier and filter.
This part function is for transfer the input AC voltage to a DC voltage through a bridge rectifier and a bulk capacitor.

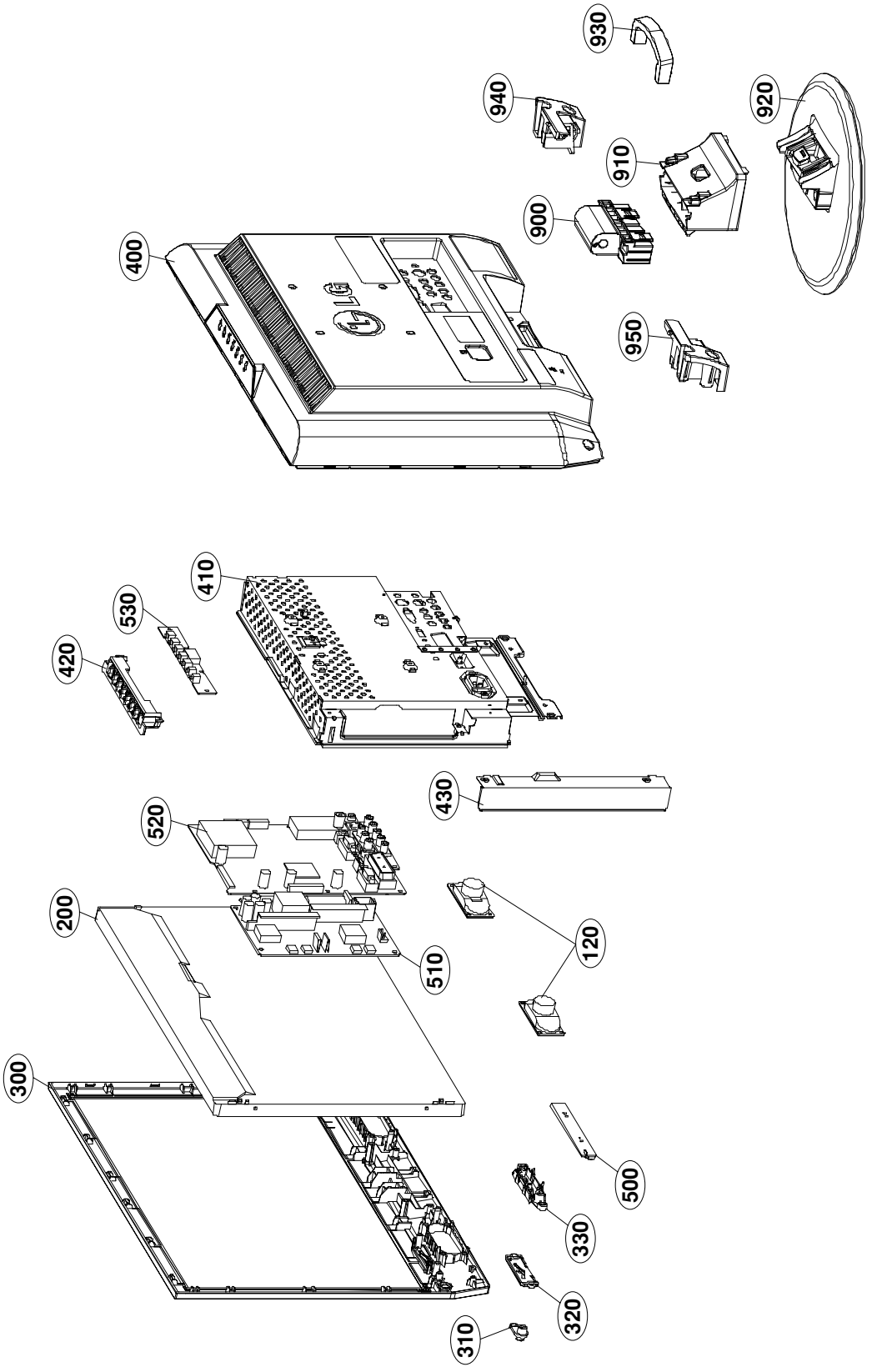
3. Energy Transfer.
This part function is for transfer the primary energy to secondary through a power transformer.

4. Output rectifier and filter.
This part function is to make a pulse width modulation control and to provide the driver signal to power switch, to adjust the duty cycle during different AC input and output loading condition to achieve the dcoutput stabilized, and also the over power protection is also monitor by this part.

5. Photo-Coupler isolation.
This part function is to feed back the DC output changing status through a photo transistor to primary controller to achieve the stabilized DC output voltage.

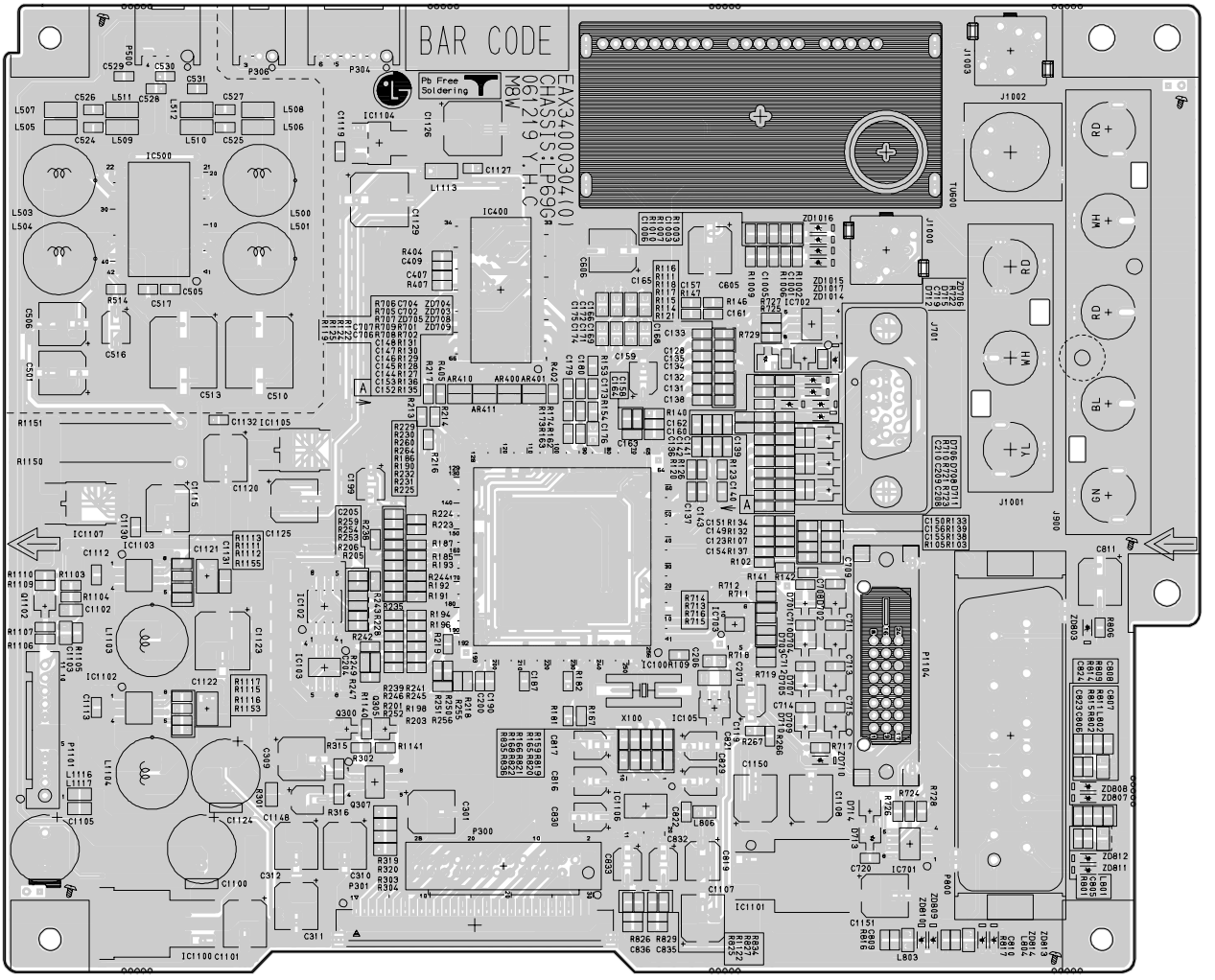
6. Signal collection.
This part function is to collect the any change from the DC output and feed back to the primary through photo transistor.

EXPLODED VIEW

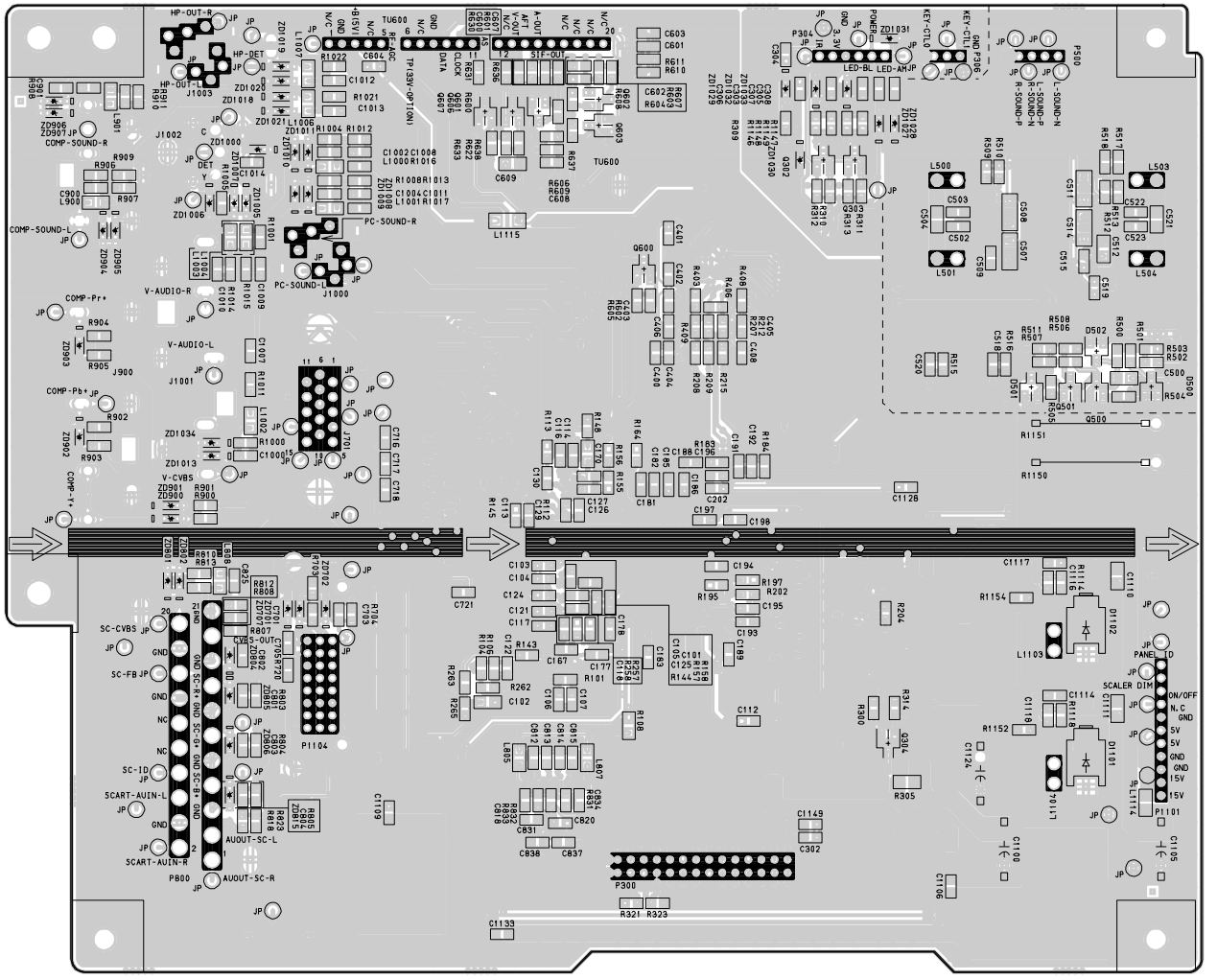


PRINTED CIRCUIT BOARD

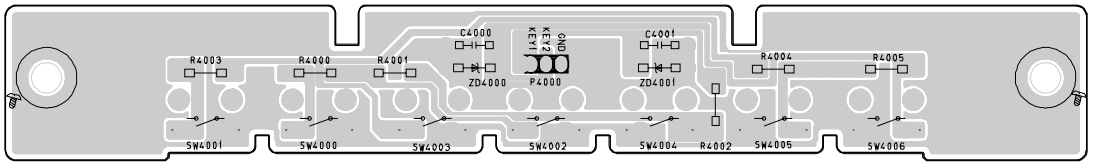
MAIN (TOP)



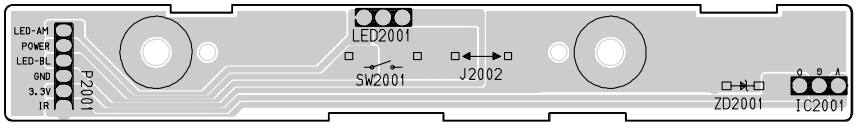
MAIN (BOTTOM)



CONTROL KEY

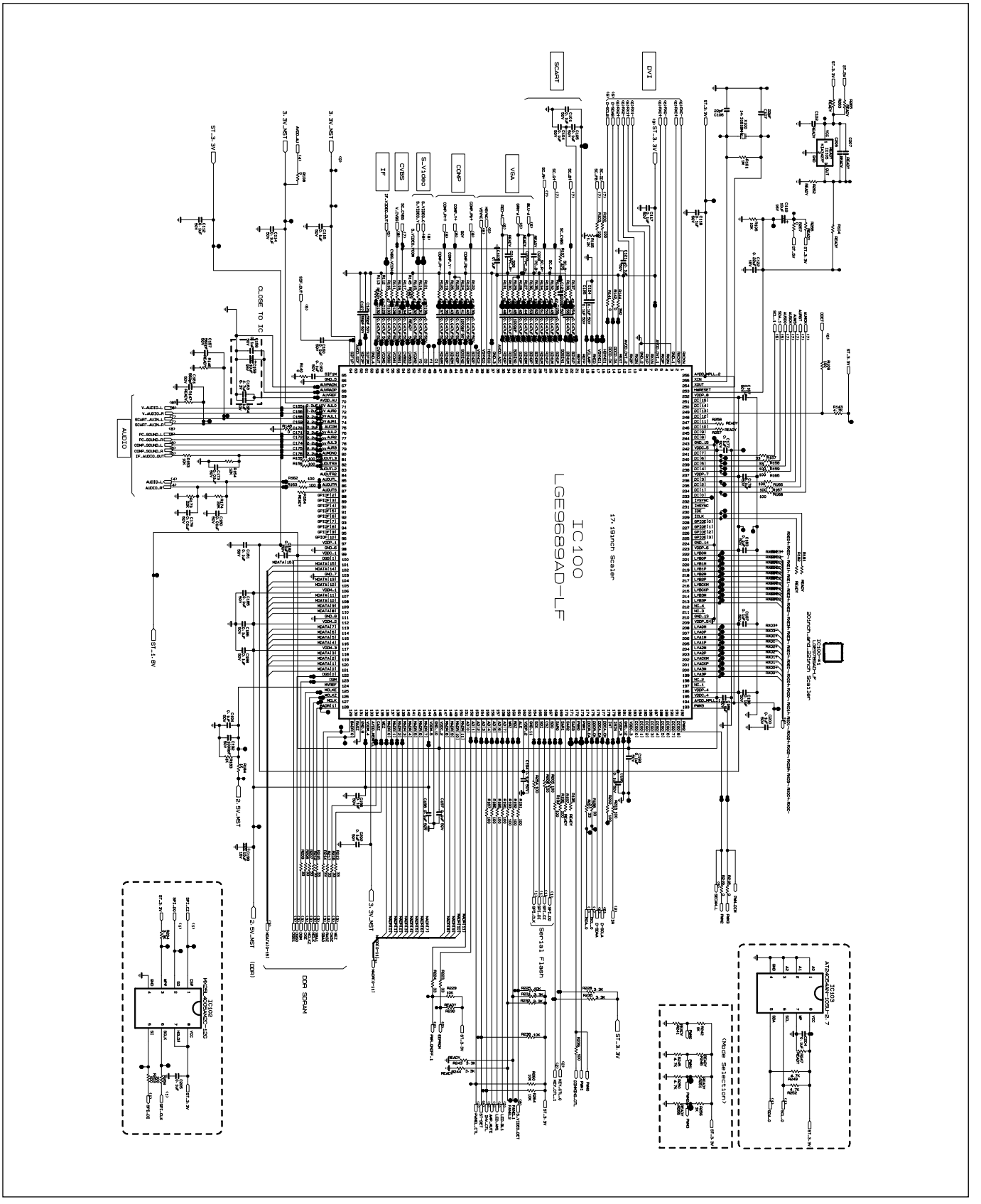


LED & P/SW

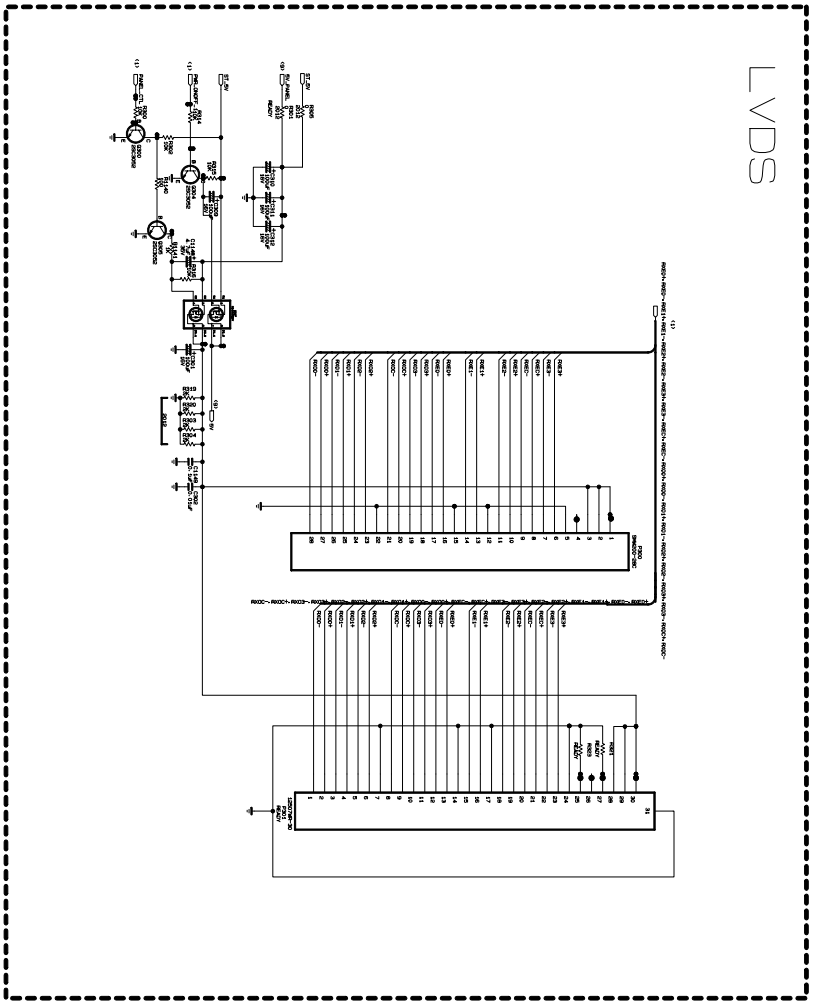


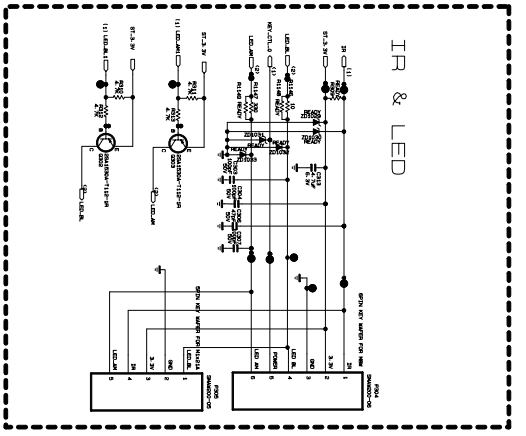
SCHEMATIC DIAGRAM

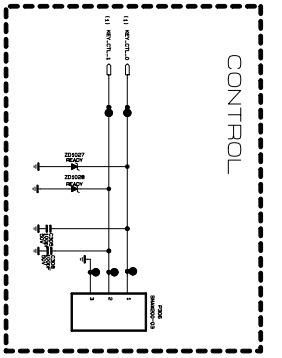
1. MSTAR



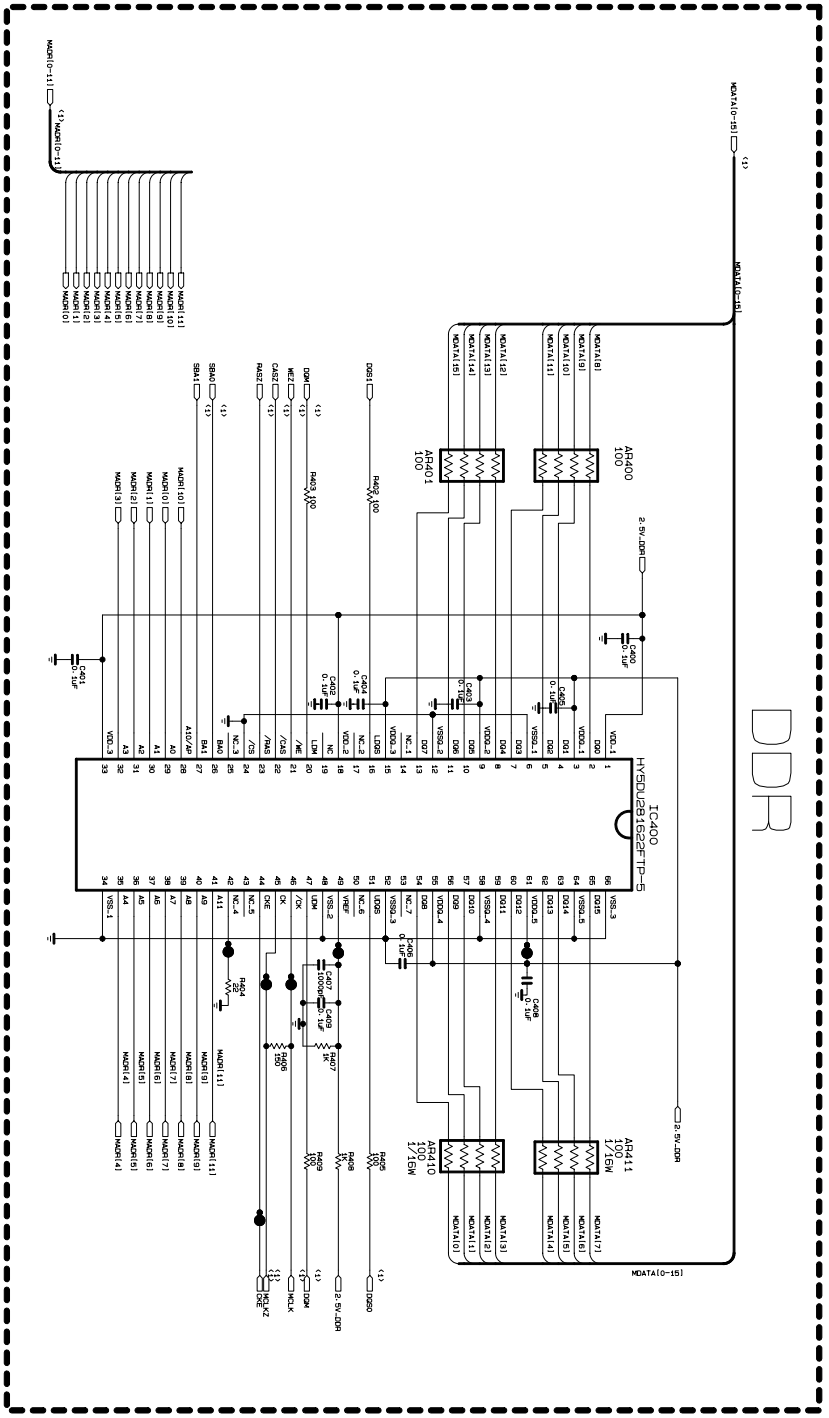
2. PANEL & CONNECTOR



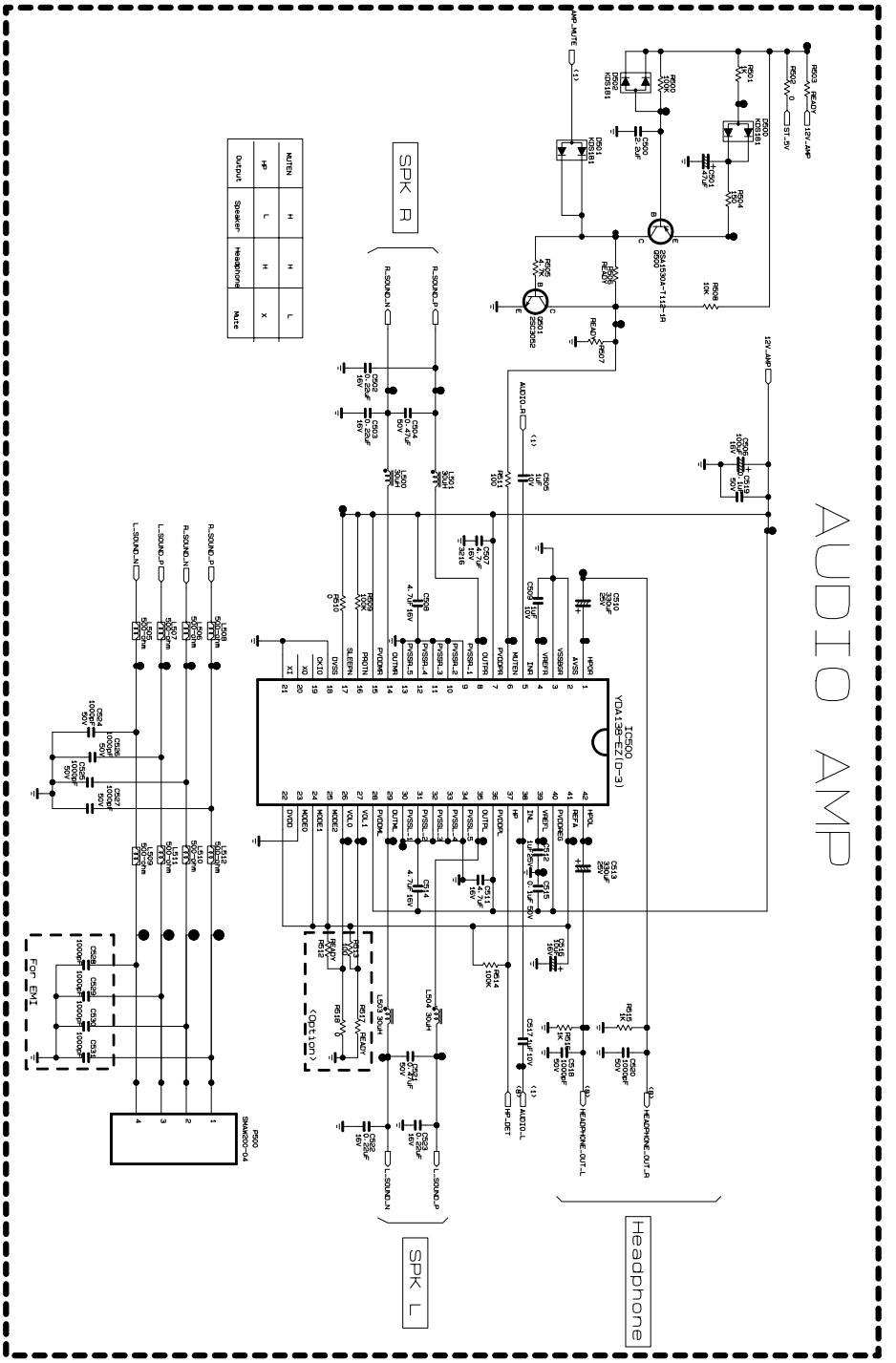




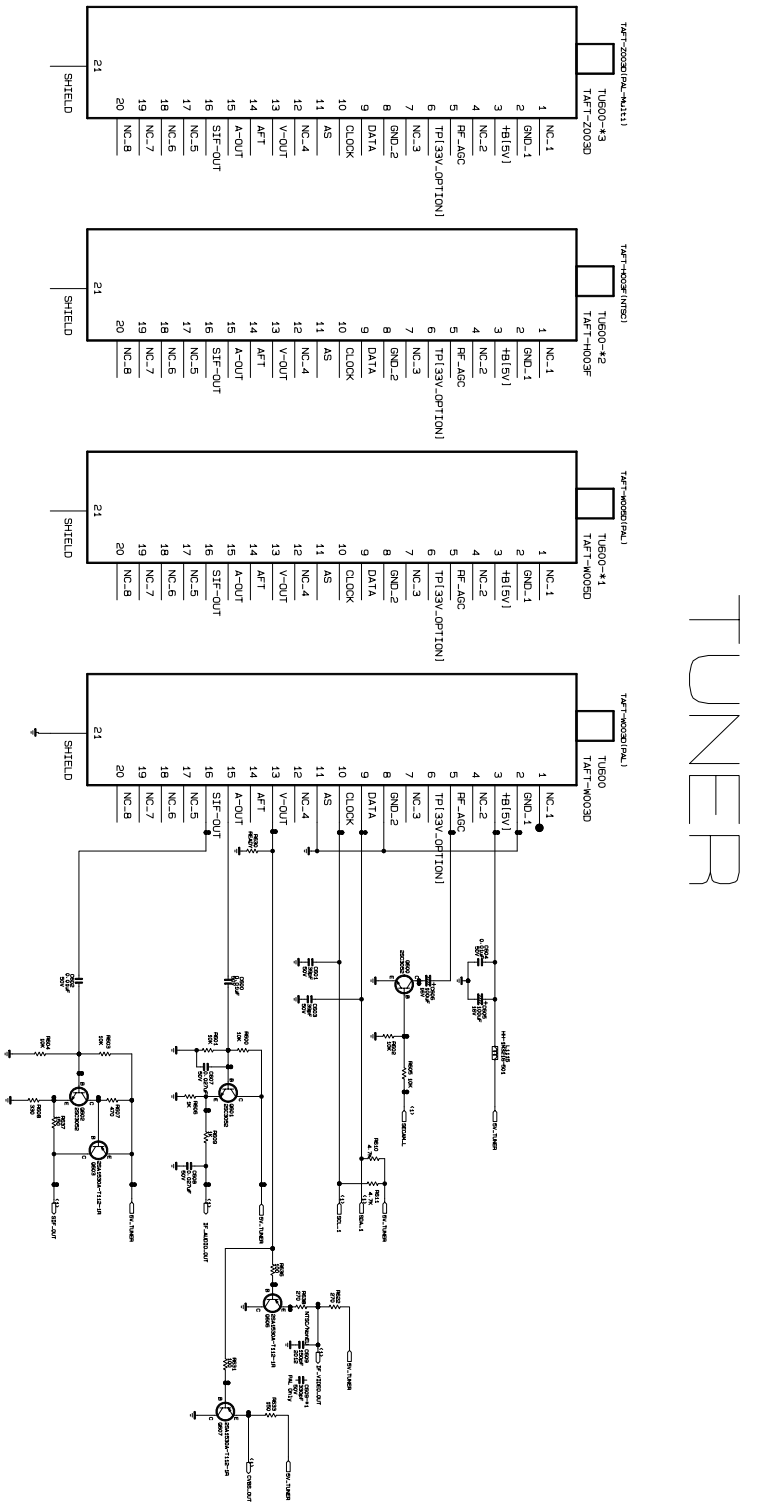
3. DDR


DDR
IC400
HY5DU281622FTP-5
AR400
100
AR401
100
AR410
100
1/16W
AR411
100
1/16W
MDATA[0~15]
MADR[0~11]
2.5V_DDR
2.5V_.DDR
MCLK
MCLKZ
CKE
DQM
DQS0
C400
0.1uF
C401
0.1uF
C402
0.1uF
C403
0.1uF
C404
0.1uF
C405
0.1uF
C406
0.1uF
C407
1000pF
C408
0.1uF
R403 100
R404 22
R405 100
R406 100
R407 1K
R408
R409

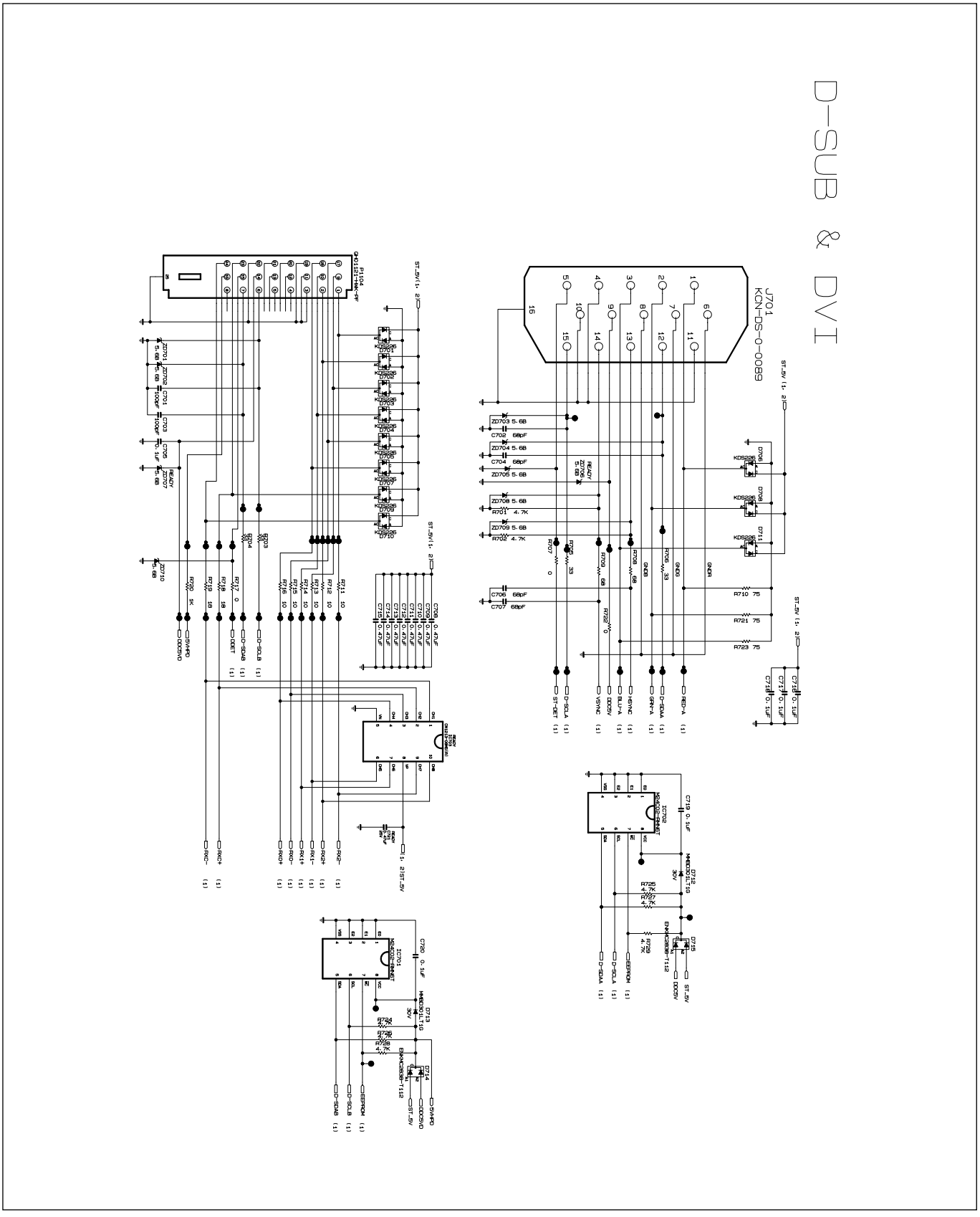
4. AMP


AUDIO AMP
SPK R
SPK L
Headphone
IC500
YDA138-CE7/D-3)
For EMI
<Option>
Output
Speaker
Headphone
Mute
MUTEN
HP

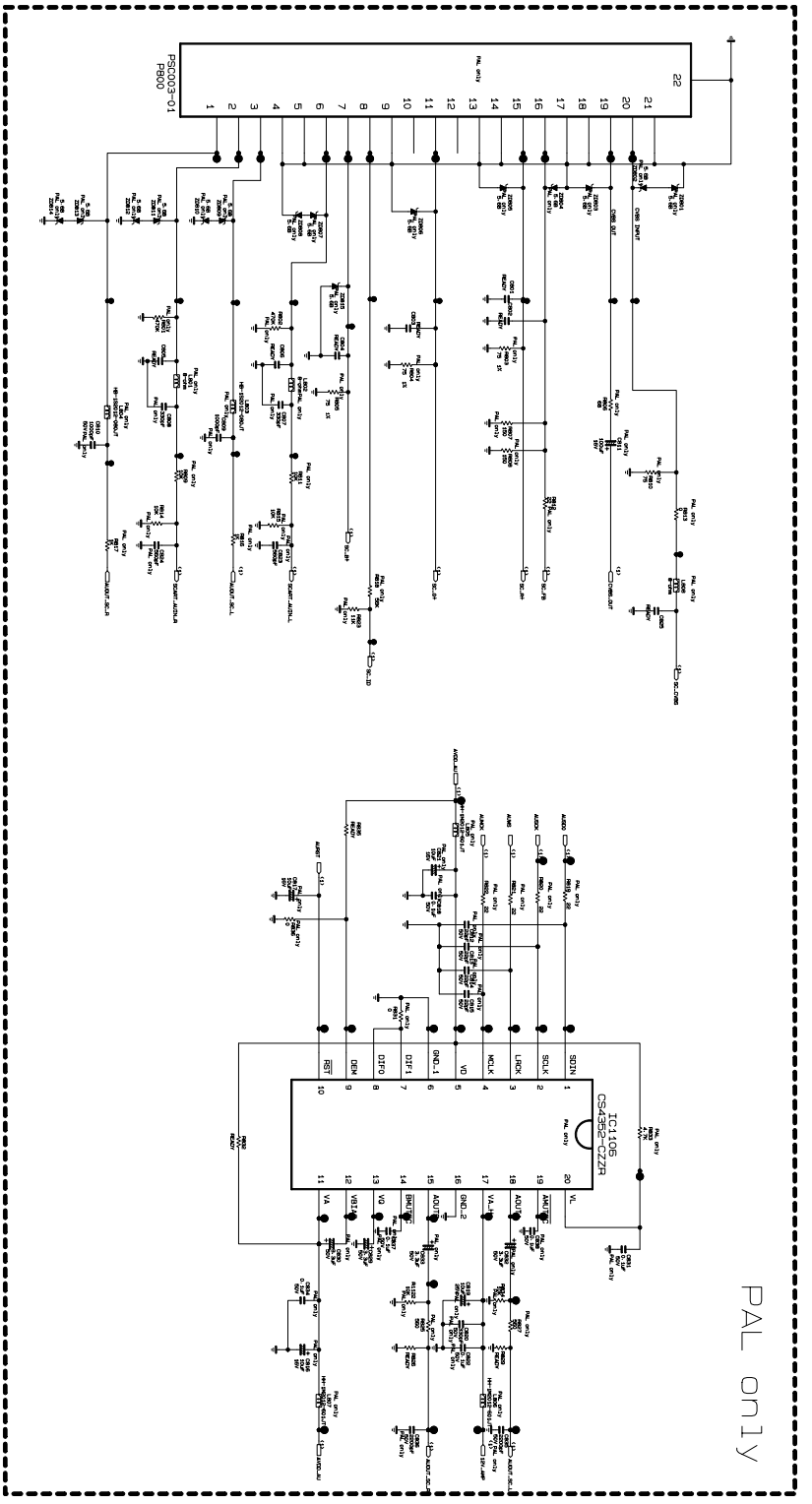
5. TUNER


TUNER
TU600
TAFT-W003D
TU600-*1
TAFT-W005D
TU600-*2
TAFT-H003F
TU600-*3
TAFT-Z003D
NC_1
GND_1
+B(5V)
NC_2
RF_AGC
TP(33V_OPTION)
NC_3
GND_2
DATA
CLOCK
AS
NC_4
V-OUT
AFT
A-OUT
SIF-OUT
NC_5
NC_6
NC_7
NC_8
SHIELD

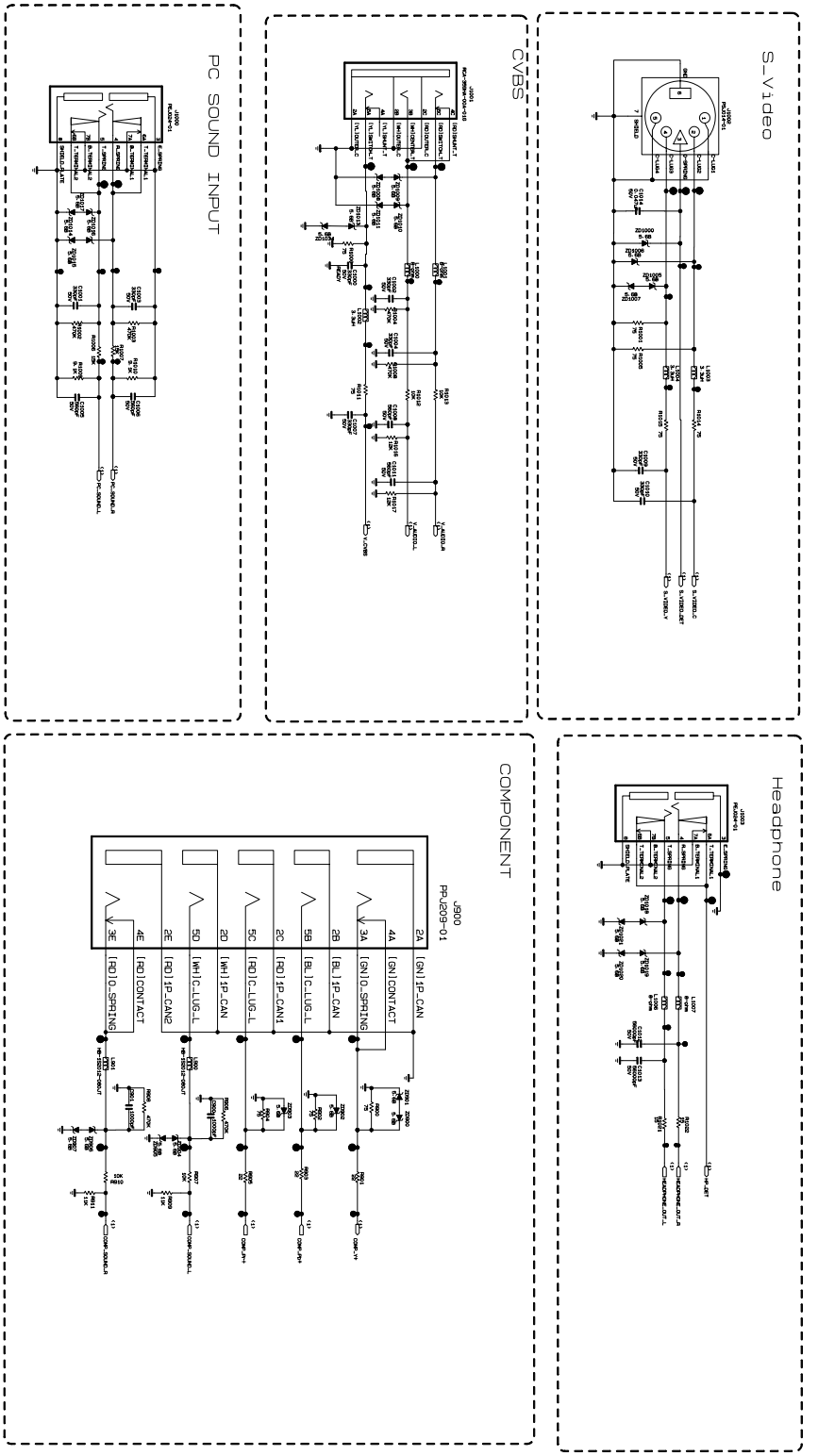
6. DSUB & DVI



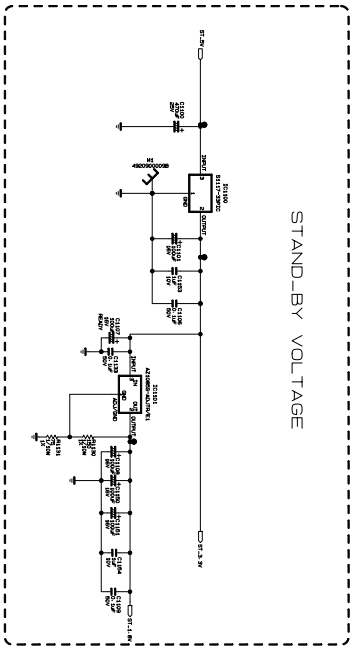
7. SCART & DAC

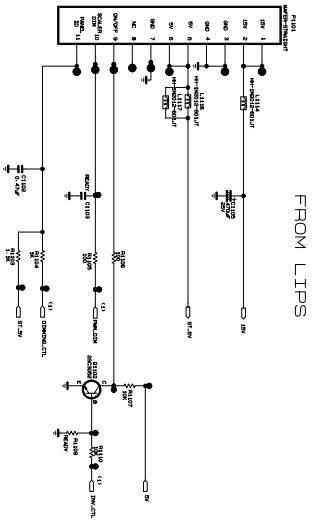


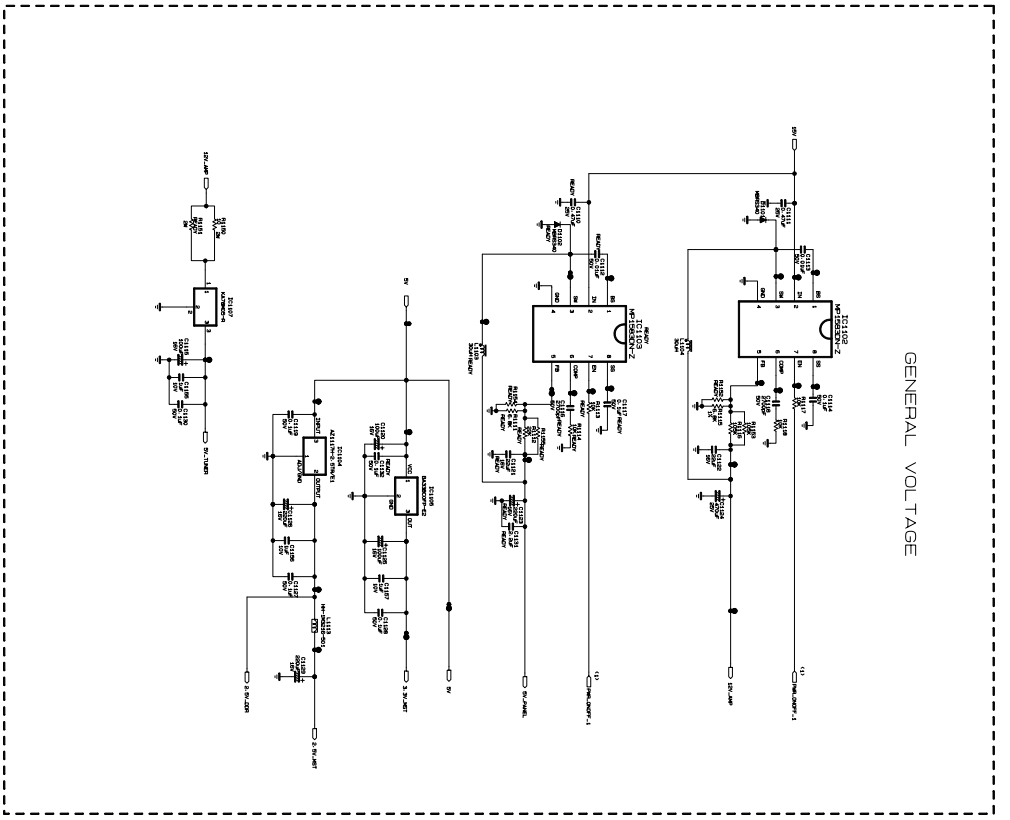
8. JACK



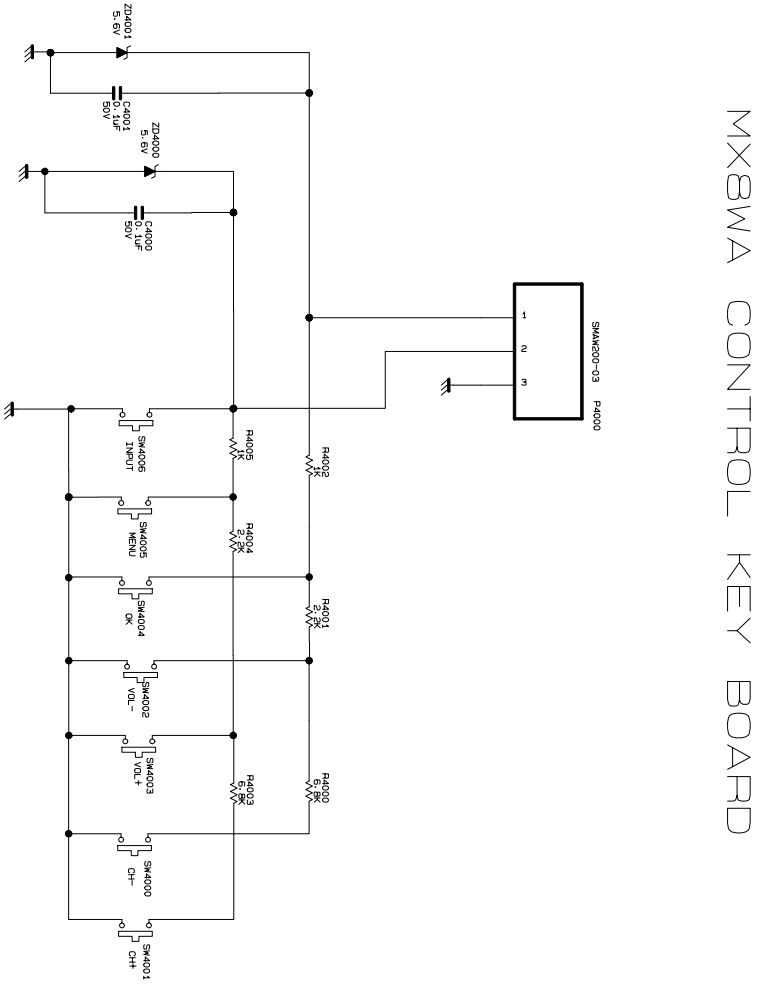
9. POWER



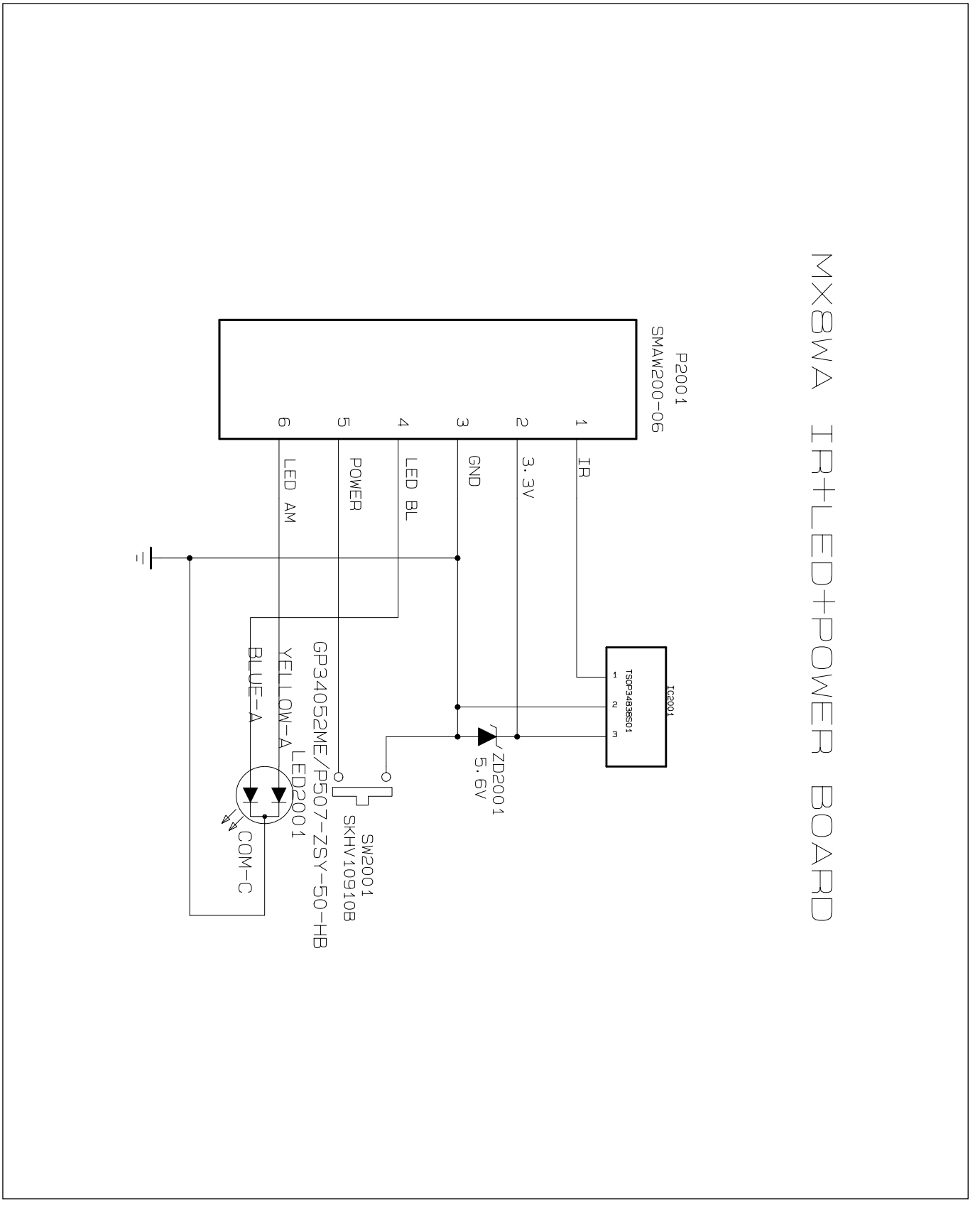




10. CONTROL KEY



11. IR + LED + POWER



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